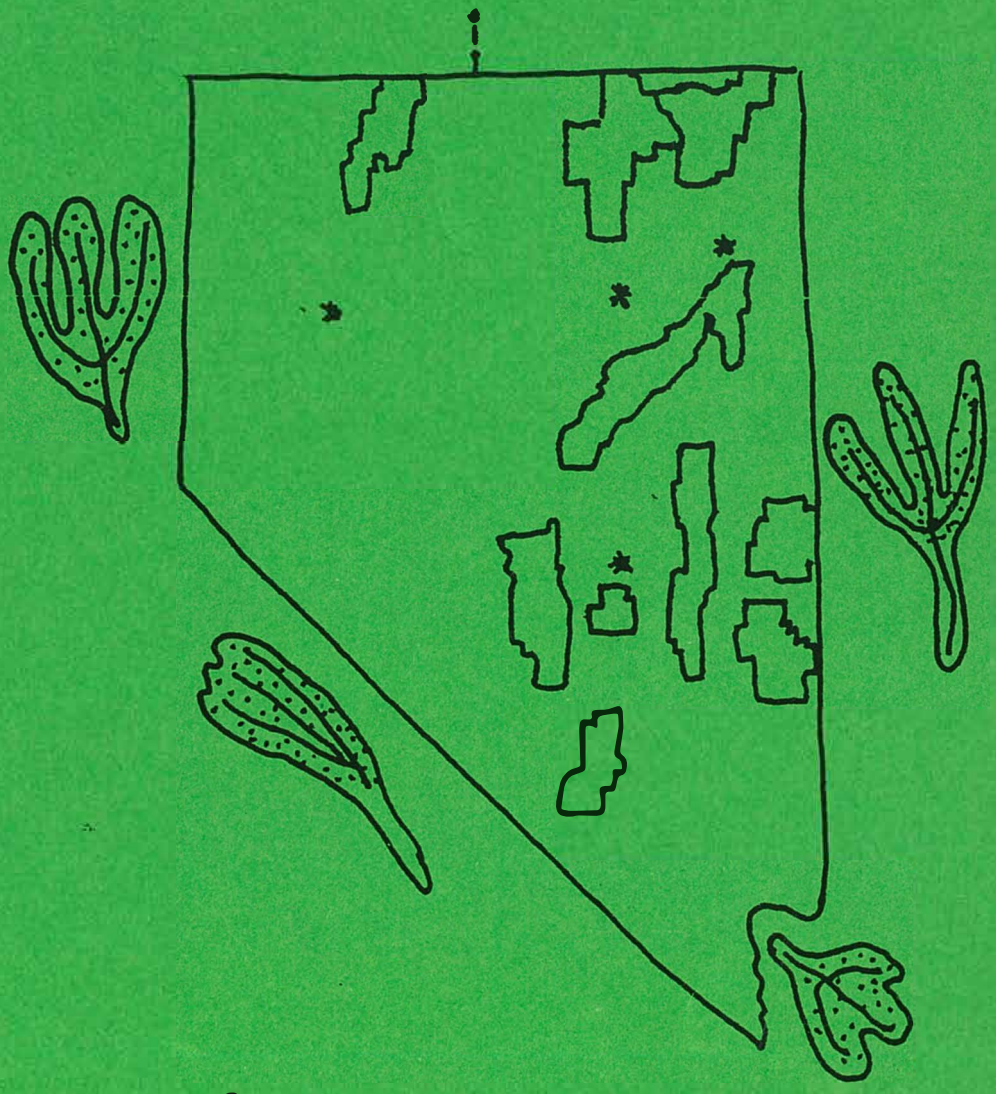
Sagebrush-Grass Community Types of the Humboldt National Forest



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By: Lynda Peck Nelson
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SAGEBRUSH-GRASS COMMUNITY TYPES OF THE HUMBOLDT NATIONAL FOREST

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for community-types and phases of community-types.

INTRODUCTION

Environmental Setting

The Humboldt National Forest encompasses approximately 2,466,780 acres and is distributed throughout northern and eastern Nevada. The northern half of the forest is comprised of the Ruby and E. Humboldt Mountains, Independence Mountains and the Jarbidge Mountains. The southern portion of the forest is comprised of the Snake Range, Schell Creek Range , White Pine Range and the Quinn and Grant Range. The western boundary of the Humboldt Forest is represented by the Santa Rosa Range north of Winnemucca.

A large diversity of plant and animal species occur throughout the forest due to the vast elevational, topographical and climatological variation.

Climate

The annual precipitation ranges from 7 inches on the lower more xeric reaches of the forest to 17 inches on the upper more mesic sites. The southern portion of the forest receives most of its moisture from Pacific based storm tracks whereas the northern portion receives moisture from the Artic and Alaska storm tracks.

Geology

The geology can best be described as highly variable with a high occurrence of dolomite and limestone in the southern half of the forest and rhyolite, andesite and volcanic tuff occurring more in the northern half.

Soils

The soil families best describing the area are the Mollisols found on the more mesic areas, Aridisols on the drier lower bench slopes, and some inclusions of Entisols, Inceptisols and Alfisols.

Vegetation

The vegetation is characterized by a dominant overstory of big and low sagebrush with varying grass and forb species in the understory. Higher elevation slopes are occupied by limber pine, bristllecone pine and sub-alpine fir.

Ecological Classification

Ecological classification of vegetation is not a new idea. Dyksterhuis (1949) introduced the range site concept which is a method of classification based on the climax vegetation. Until only recently, the Soil Conservation Service has become the main component of the "Range Site" theory. Currently the SCS has proposed shifting the "Range Site" concept to the "Ecological Site" concept.

Much controversy exists among management agencies and plant ecologists as to the best method of assessing our rangeland resources. The habitat-type approach to vegetation classification was introduced by Daubenmire (1952, 1968) and has been used widely by the U.S. Forest Service. The "Habitat-type" concept is based on defining "relict" or "pristine" areas of vegetation and assessing similar areas (i.e., soils, geology, topography) and how they compare to the relict stand.

Problems exist in the habitat type approach to classification in that the majority of the western rangelands have undergone some type of disturbance or change from both biotic and abiotic factors. Locating relict areas representative of all the habitat-types can be taxing, confusing and nearly impossible.

For this reason, we chose to engage the community-type method of classification on the Humboldt National Forest. A community-type by definition is a grouping of floristically similar dominant and subdominant plants at a given site. This approach will enable the land manager to assess the current ecological status of the rangeland resources at any given time or place.

Assuming the community-types are in good to excellent conditions, they can in turn be equated with Potential Natural Communities of an ecological site.

STUDY OBJECTIVES

The objectives of this study which was conducted on the Humboldt National Forest between 1983 and 1986 was to correlate soils and vegetation with the intent of deriving vegetation community types. This study was done in conjunction with an Order 3 soil survey.

The management direction of Region four has indicated a need for a vegetation classification scheme that would provide updated rangeland condition or ecological status and also detailed soils information. This objective is long overdue and much needed for allotment management planning and updating, minerals, range improvement work and long term planning.

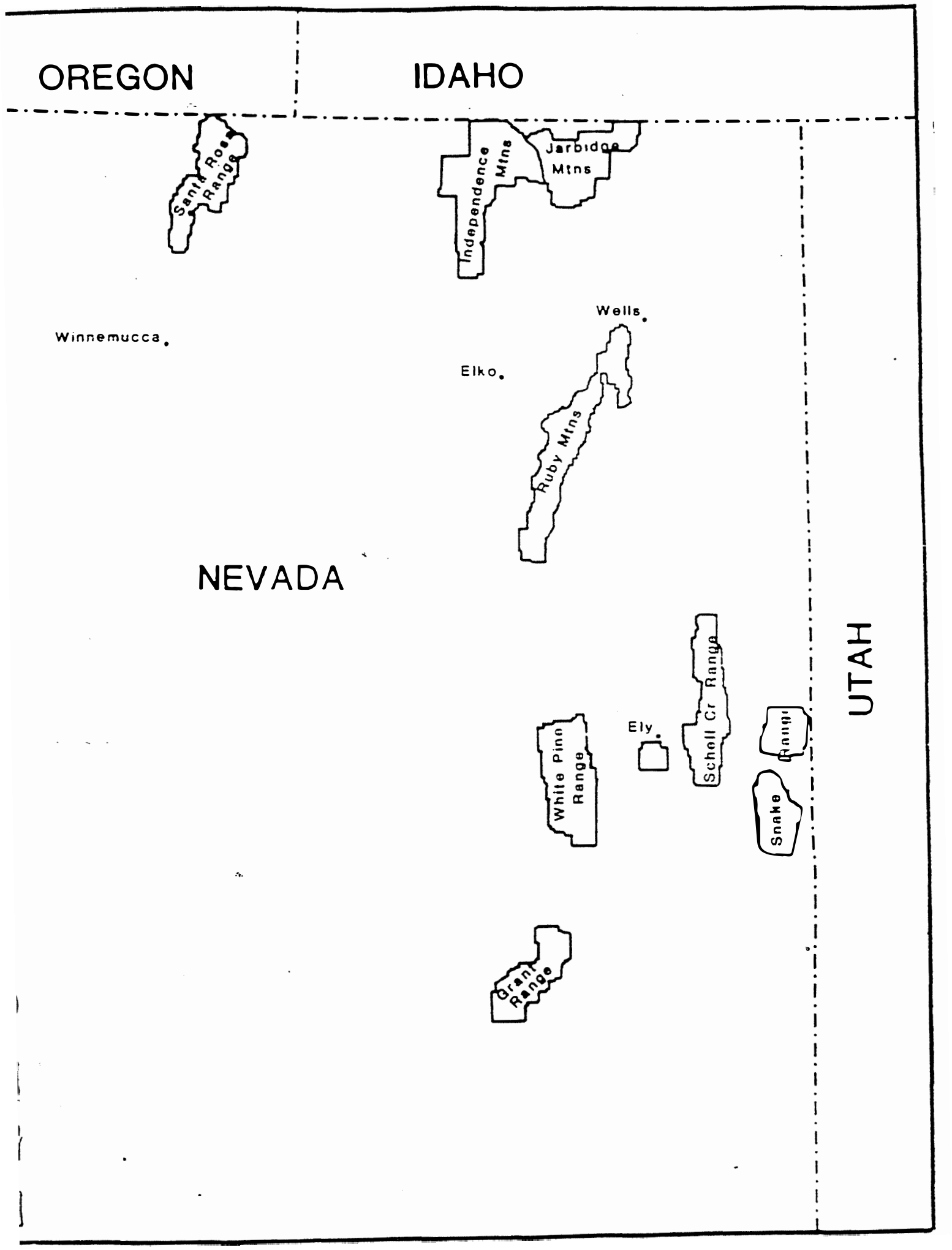
The community-type classification done on the Humboldt National Forest will be able to meet the land manager's needs and objectives to continue the best management practices.

Description of Study Area

The study was conducted throughout eight mountain ranges on the Humboldt National Forest (Fig. 1). Elevation ranges were from approximately 5,500 ft. to 10,000 ft.

A total of 400 sites were sampled for vegetation cover, density, species composition, production, soil great group, pH, slope and soil depth (Table I).

Good to excellent condition sites with a dominant sagebrush overstory and dominant grass understory of similar soil types were selected for sampling. The


OREGON
IDAHO
Santa Rosa Range
Independence Mtns
Jarbidge Mtns
Wells
Winnemucca
Elko
Ruby Mtns
NEVADA
UTAH
Schell Cr Range
Ely
White Pine Range
Snake
Grant Range

Community Type

Area	ARNO ATCO SIHY	ARNO ORHY	ARNO AGSP	ARAR AGSP	ARAR FEID POSA	ARAR FEID	ARLO FEID	ARWYO SIHY	ARTR AGSP	ARTR FEID	ARVA AGSP	ARVA FEID	ARVA ELCI	ARVA SYOR AGSP	ARVA SYOR BRCA
	n=12	n=16	n=44	n=27	n=19	n=19	n=4	n=4	n=6	n=8	n=63	n=67	n=9	n=23	n=47
Snake Range	7	12	21	13	2	--	--	--	--	--	15	--	--	6	--
Schell Cr. Range	--	1	13	9	--	--	--	1	--	--	17	1	--	10	--
Grant Range	5	2	5	--	1	--	--	1	--	--	5	--	--	--	--
White Pine Range	--	1	4	3	--	--	--	1	1	--	11	--	--	2	--
Ruby Mountains	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--
Santa Rosa Range	--	--	--	1	5	--	--	1	1	1	1	2	1	--	2
Independence Range	--	--	1	1	10	11	4	--	4	5	11	33	8	4	35
Jarbidge Mountains	--	--	--	--	1	8	--	--	--	2	--	31	--	1	10

majority of the sampling was done during the grazing season so adjustments were made to compensate for utilization and phenology.

A total of 214 species occurred over the 400 rangeland sites, with 140 forb species, 35 grass and 39 shrub species identified. Other species did occur but were not identifiable to the species level because of utilization and early phenological stages.

Field Methodology

The field data gathered between 1983 and 1986 was the basis for describing the fifteen community-types on the Humboldt Forest.

Good to excellent condition sagebrush-grass sites with varying aspect, elevation, soil type, parent material and species composition were examined for selection. Upon site selection, a 50'x 50' macroplot was established with a homogeneous vegetation and soil type. Two, 50' tapes were stretched to denote the baseline and sideline of the macroplot. Five, 50' transects were randomly located within the macroplot for sampling various vegetation parameters.

Frequency

Twenty-five frequency plots were established for each macroplot; one plot every 10' along each 50' transect. For each plot the third quadrate of the frequency frame was examined for species composition rooted within the 25 x 50cm area. It was noted from prior analysis that the third quadrate of the frequency frame provides the adequate area to represent the species occurring within the sagebrush-grass vegetation types.

Ocular shrub canopy cover was recorded on each plot along with ground cover variables established from five fixed points.

Density

Shrub density was recorded on each macroplot by establishing five, 3'x 50' belt transects. Shrub-species and age class of plants rooted within the transect were counted and recorded.

Shrub Cover

Shrub canopy cover was determined by line intercept underneath five, 50' randomly located transects within the macroplots. Shrub species and amount of intercept was recorded and converted to percent cover.

Production

Production in lbs./acre of grasses, forbs and browse was determined by the weight-estimate method. Ten, 9.6 square foot plots were randomly located within the macroplot. In plant communities containing higher species diversity, 20, 4.8 square foot plots were examined. The first and fifth plot were consistently clipped and weighed to establish a basis for estimating the remaining eight plots. Moisture, phenology and utilization correction factors were all established in the field and later converted to usable forage in lbs./acre of dry weight.

Soils

Soil descriptions were made within each macroplot and classified to the family level. Information such as aspect, elevation, slope, parent material, pH, landform and percent rock content in the soil profile were also gathered and

incorporated into a master list, along with vegetation type to aid in future site selections and community-type classification. Soil samples were taken from the 0-15cm level and the 40-60cm level of the soil profile. Samples were analyzed in the lab for $CaCO_3$ equivalent, pH, electrical conductivity, organic carbon, base saturation, nitrogen, phosphorus and calcium content, textural class and percent clay.

Data Analysis

Relative frequency or percent species composition was calculated by dividing the frequency of a given species by the frequency of all species. This helped determine the dominant shrubs, forbs and grasses for a given vegetation site.

Ground cover variables (ie., veg. litter, rock) were tallied and divided by the total number of fixed points to convert to percent.

Shrub density by age class was tallied and converted to plants per hectare for consistency in comparison of sites.

Shrub cover by line intercept was converted to percent cover by species and total shrub cover on the site.

Production data was adjusted for moisture, phenology and percent utilization and converted to dry weight. Species composition was calculated and desirability ratings were assigned to each species to determine an overall vegetation condition rating.

TWINSPAN or Two-way Indicator Species Analysis was used to develop community type classifications for the sagebrush communities sampled. Twinspan is a technique used for separating two groups of samples into a hierarchy of smaller and smaller clusters based on indicator species. The end result is a corresponding species classification which is used to produce an arranged species/sample data matrix.

In the initial data analysis, all 400 sites and 214 species were included in the Twinspan sample. The vegetation parameters used in the analysis were vegetation frequency, cover and production. Samples were tentatively assigned a community-type based on their position in the data matrices. The analysis based on production attributes yielded the clearest separation of samples into community-types and thusly was used in the final classification (Jensen 1987).

The resulting classification yielded fifteen community-types and seven phases of community-types. Sagebrush community-type names were obtained by denoting the dominant shrub and grass in each type.

COMMUNITY-TYPE CLASSIFICATION

Sagebrush Identification

The majority of the sagebrush communities sampled were identified by taxonomic, morphologic and autecological methods. Species of sagebrush in question were verified with Al Winward, Forest Service Ecologist.

Further taxonomic verification was done by soaking the sage samples in question in alcohol and then fluorescing them under long wave, ultraviolet light.

The following is a table providing fluorescent color of various sagebrush species developed by Winward and Tisdale (Hironaka 1983).

Group I. Fluorescence of brownish-red

Artemisia tridentata ssp. wyomingensis
Artemisia tridentata ssp. tridentata
Artemisia nova
Artemisia rigida

Group II. Fluorescence of creamish-blue

Artemisia arbuscula ssp. arbuscula
Artemisia arbuscula ssp. thermopola
Artemisia longiloba
Artemisia tripartita ssp. tripartita
Artemisia cana ssp. viscidula
Artemisia cana ssp. bolanderi
Artemisia tridentata ssp. vaseyana

Additional chemotaxonomy work has, and is being done to further differentiate sagebrush subspecies by chemical constituents. This will further aid resource managers in arriving at the proper sagebrush identification for management objectives.

KEY TO SOME TAXA OF ARTEMISIA IN NEVADA 6/84

prepared by
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Leaves entire (1)

2 Leaves silver-gray, usually 3/8 to 1-1/8 in. (1-3 cm.) long with rounded tips, plants from internally drained basins with seasonal flooding —— A. cana ssp. bolanderi (Bolander silver sagebrush)

FLUORESCENT COLOR (2) ———————— SHADES OF CREAMISH-BLUE

2 Leaves green-gray, usually 1-1/8 to 2 in. (3-5 cm.) long with pointed tips, plants along stream bottoms or meadow margins from mid to high elevations ———————————— A. cana ssp. viscidula (mountain silver sagebrush)

FLUORESCENT COLOR ———————————— SHADES OF CREAMISH-BLUE

Leaves divided or lobed

3 Mature shrubs up to 20 in. (51 cm.) high

4 Leaves divided (lobe length > 3 times width)

5 Mature shrubs dwarf, < 8 in. (20 cm.) high, leaves pinnately divided into 3-11 lobes ——— A. pygmaea (pigmy sagebrush)

FLUORESCENT COLOR ———————— SHADES OF CREAMISH-BLUE

5 Mature shrubs low, 8 to 20 in. (20-51 cm.) high, leaves not pinnately divided

6 Branches spinescent, leaves 3 to 5 palmately divided with segments 3-lobed ———————— A. spinescens (bud sagebrush)

FLUORESCENT COLOR — SHADES OF BROWNISH-RED OR COLORLESS

6 Branches not spinescent, leaves deeply 3-parted or 3-lobed, mostly 3/4 to 1-1/2 in. (2-4 cm.) long ———————— A. tripartita ssp. tripartita (threetip sagebrush)

FLUORESCENT COLOR ———————— SHADES OF CREAMISH-BLUE

4 Leaves lobed (lobe length < 3 times width)

7 Heads with both ray flowers and disc flowers, leaf lobe tips pointed ———————— A. bigelovii (Bigelow sagebrush)

FLUORESCENT COLOR ———————— SHADES OF CREAMISH-BLUE

7 Heads with disc flowers only, leaf lobe tips rounded

8 Inflorescence paniculate, seed stalks brownish and persist into following year, leaves sticky to touch when crushed, pungently aromatic, glands (dark green) easily visible under 10X lens, leaf hairs lay flat against leaf surface in clusters

9 Leaves green ———————————————— A. nova

9 Leaves gray-green ———————————— A. nova (gray form) (black sagebrush)

FLUORESCENT COLOR — SHADES OF BROWNISH-RED OR COLORLESS

8 Inflorescence spicate or racemose, seed stalks grayish and weakly persistent, leaf hairs are soft and straight, not in clusters

10 Leaves mostly < 3/8 in. (1 cm.) long, broadly cuneate or fan shaped (leaf stem short), flower stalks are usually < 10 in. (25 cm.) long

11 Seeds mature mid-July to mid-August ——— A. longiloba (alkali sagebrush)

FLUORESCENT COLOR ——— SHADES OF CREAMISH-BLUE

11 Seeds mature late August to October ——— A. arbuscula ssp. arbuscula (low sagebrush)

FLUORESCENT COLOR ——— SHADES OF CREAMISH-BLUE

10 Leaves mostly > 3/8 in. (1 cm.) long, cuneate at tips (leaf stem long), flower stalks are > 10 in. (25 cm.) long ———(3) (Lahontan sagebrush)

FLUORESCENT COLOR -- SHADES OF BLUE-GREEN TO YELLOW-GREEN

3 Mature shrubs more than 20 in. (51 cm.) high

12 Uneven topped shrubs, vegetative stems are > half the length of adjacent flower stalks, stalks arise throughout crown NOTE: Vegetative stem may be less than half the length of adjacent flower stalks in ssp. wyomingensis and Unnamed B.

13 Mature plants > 40 in. (102 cm.) in height, leaf margins not belled outward, main stem usually undivided at ground level (trunklike) ——— A. tridentata ssp. tridentata (basin big sagebrush)

FLUORESCENT COLOR —— SHADES OF BROWNISH-RED OR COLORLESS

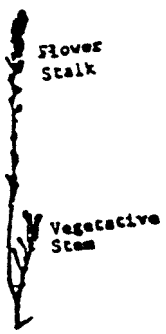
13 Mature plants < 40 in. (102 cm.) in height, leaf margins somewhat belled outward, main stem usually divided at ground level

14 Fluoresces shades of brownish-red or very pale shades of creamish-blue under LWUV light ——— A. tridentata ssp. wyomingensis (Wyoming big sagebrush)

14 Fluoresces moderate to bright shades of creamish-blue under LWUV light ——— Unnamed B

NOTE: Thought to be a stabilized cross between ssp. wyomingensis and ssp. vaseyana by A.H. Winward.

12 Even topped shrubs, vegetative stems are < half the length of adjacent flower stalks, stalks arise from upper crown extending above foliage



15 Flower heads numerous with up to 6 flowers per head ——— A. vaseyana var. pauciflora (mountain big sagebrush)

FLUORESCENT COLOR ——— SHADES OF CREAMISH-BLUE

15 Flower heads relatively few but with more than 6 flowers per head ——— A. vaseyana var. vaseyana (high elevation) mountain big sagebrush)

FLUORESCENT COLOR ——— SHADES OF CREAMISH-BLUE

(1) Leaf characteristics in this key are based on overwintering persistent leaves only.

(2) Crushed sagebrush leaves in methanol or water solution under a long-wave ultraviolet light.

(3) Scientific name to be assigned by A.H. Winward

1a. Heads with both ray (marginal) flowers and disc flowers: plants subshrubs or shrubs.

2a. Plants subshrubs: leaves 2 or 3 times pinnately parted, silky-canescent; widely distributed through western North America, Siberia, northern Asia, and Europe ..... *A. frigida*
(fringed sagebrush)

2b. Plants shrubs: leaves not as above.

3a.. Branches spinescent; leaves 3 to 5 palmately parted with segments three-lobed, white tomentose, deciduous; occurs on dry, saline plains and hills from northwestern Montana west to eastern Oregon and south to California, Arizona, and New Mexico ..... *A. spinescens*
(bud sagebrush)

3b. Branches not spinescent; leaves not as above.

4a. Leaves filiform, entire or ternately divided into filiform segments, silvery-white canescent; heads with 2 to 3 ray flowers and 1 to 6 disc flowers; occurs mostly in sandy soil from Nevada east to western Nebraska and south to Texas, Arizona, and Chihuahua ..... *A. filifolia*
(sand sagebrush)

4b. Leaves narrowly cuneate, mostly finely tridentate, silvery-canescent; heads smaller with 0 to 2 ray flowers and 1 to 3 disc flowers; occurs in canyons, gravelly draws, and dry flats from western Texas to California ..... *A. bigelovii*
(Bigelow sagebrush)

1b. Heads with disc flowers only; plants shrubs.

5a. Plants up to 5 dm high.

6a. Plants dwarf, less than 2 dm high.

7a. Plants depressed, cushionlike shrubs; leaves 2 to 8 mm long, pinnately divided into 3 to 11 lobes; limited to calcareous desert soils, central and western Utah, central and eastern Nevada, and northern Arizona ..... *A. pygmaea*
(pigmy sagebrush)

7b. Plants with decumbent, frequently layering branches; leaves often 3 cm long, deeply cleft into 3 linear lobes; rocky knolls from 2 430 to 2 740 m in central and southeastern Wyoming to southern Oregon ..... *A. tripartita* ssp. *rupicola*
(Wyoming threetip sagebrush)

6b. Plants low from 2 to 5 dm high (but may be less).

8a. Heads axillary and sessile, generally all surpassed by their subtending leaves; leaves deeply divided into 3 to 5 narrowly linear lobes; deciduous ..... *A. rigida*
(stiff sagebrush)

8b. Heads usually in branched racemose panicles or if spikelike, then subtending leaves do not surpass heads; leaves three- to five-toothed or lobed, cuneate to fan-shaped, persistent.

9a. Leaves broadly cuneate, deeply three-lobed involucre broadly campanulate; flower heads 3 to 5 mm broad with 6 to 11 disc flowers; blooming begins in mid-June; seeds 2.5 mm long, ripening in August; adapted to heavy, highly impermeable, saline soils from 1 800 to 2 450 m from southwestern Montana to northwestern Colorado, Utah, Nevada, Idaho, and Oregon ..... *A. longiloba*
(alkali sagebrush)

9b. Leaves cuneate to broadly cuneate or fan-shaped, three- to five-toothed or cleft; involucre narrowly campanulate; flower heads and seed smaller than above; blooming normally occurring later than July; seed ripen late September and October.

10a. Leaves cuneate, three-toothed (upper leaves may be entire), viscid; heads arranged in narrow spikelike panicles; disc flowers 3 to 5 per head; corollas 1.8 to 3 mm long; involucral bracts glabrous or nearly so; plants usually dark green with persistent red-brown inflorescent stalks; occurs on dry, shallow, rocky soil between 1 500 and 2 400 m in most western States ..... *A. nova*
(black sagebrush)

10b. Leaves broadly cuneate or fan-shaped, three- to five-toothed or cleft (upper leaves may be entire), not viscid; heads arranged in narrow racemose panicles; disc flowers 5 to 11 per head; corollas 3 to 4 mm long; involucral bracts canescent; plant usually lighter in color than above; distribution similar to *A. nova* but offset to the northwest, usually found at somewhat higher elevations in more moist habitats than *A. nova* ..... *A. arbuscula*
(low sagebrush)

Figure 1.--Key to species and subspecies of *Artemisia* (from McArthur and others 1979).

5o. Plants usually over 5 dm high (14b and 17b provide most exceptions to 5 dm height).

11a. Leaves silvery-canescent, linear to linear-oblanceolate, mostly entire (occasionally with a few irregular teeth), or leaves deeply divided into 3 or more linear or linear-oblanceolate lobes.

12a. Leaves entire or occasionally with 1 or 2 irregular teeth or lobes ..... *A. cana* (silver sagebrush)

13a. Leaves 2 to 8 cm long, 1 to 10 mm wide, densely silky-canescent; heads arranged into dense leafy panicles; occurs mostly east of the Continental Divide from southern Canada to northern Colorado ..... *A. cana* ssp. *cana* (silver sagebrush)

13b. Leaves smaller than above (up to 7 cm long, 1 to 5 mm wide) and often crowded into dark-green clusters; heads arranged into dense, short raceme or spikelike inflorescences; occurs mostly west of the Continental Divide from southwestern corner of Montana to Arizona and New Mexico ..... *A. cana* ssp. *viscidula* (mountain silver sagebrush)

12b. Leaves typically deeply divided into 3 linear or narrowly lanceolate lobes which in turn may be three-cleft ..... *A. tripartita* (threetip sagebrush)

14a. Plants freely branching shrubs up to 2 m; leaves 1.5 to 4 cm long, deeply divided into 3 linear lobes, each less than 1 mm wide; occurs on dry, well-drained soils from 900 to 1 800 m from British Columbia south to northern Nevada, northern Utah, and western Montana ..... *A. tripartita* ssp. *tripartita* (tall threetip sagebrush)

14b. Plants dwarf shrubs with decumbent, often layering branches; leaves up to 3 cm long, deeply divided into linear lobes 1 mm or more wide; occurs on rocky knolls from 2 430 to 2 740 m in central and southeastern Wyoming to southern Oregon ..... *A. tripartita* ssp. *rupicola* (Wyoming threetip sagebrush)

11b. Leaves not silvery-canescent, narrowly lanceolate to broadly cuneate or fan-shaped, typically three-toothed or lobed (upper leaves may be entire).

15a. Plants low-growing, flat-topped shrubs up to 8 dm high; leaves somewhat viscid; heads occurring singly or occasionally up to 3 arranged in short interrupted spike or racemelike inflorescences; heads large with up to 20 disc flowers each; occurs in high mountainous areas of central Colorado, western Wyoming, Utah, central Sierras of California, and Carson Range of Nevada ..... *A. rothrockii* (timberline sagebrush)

15b. Plants ranging from dwarf to tall, arborescent forms up to 4.5 m; leaves not viscid; inflorescences of numerous heads arranged into leafy panicles; heads smaller with 3 to 8 disc flowers; most widespread and common shrub of western North America ..... *A. tridentata* (big sagebrush)

16a. Plants uneven-topped shrubs with flowering stalks arising throughout the crown; leaves narrowly lanceolate to cuneate; odor of crushed leaves pungent.

17a. Mature plants often arborescent (with single trunkline main stem), usually from 1 to 2 m but in some forms up to 4.5 high; leaves narrowly lanceolate with margins not curving outward; average persistent 5.6 times its width; blooming starts in late August or September; odor strongly pungent; normally occurs below 2 100 m in dry deep, well-drained soils on plains, valleys, and foothills ..... *A. tridentata* ssp. *tridentata* (basin big sagebrush)

17b. Mature plants with several main branches usually less than 1 m high; leaves narrowly cuneate to cuneate with margins curved outward; average persistent leaf length is 3.1 times its width; blooming starts in late July or August, odor pungent; occurs on dry, shallow, gravelly soil from 1 500 to 2 100 m ..... *A. tridentata* ssp. *wyomingensis* (Wyoming big sagebrush)

16b. Plants usually even-topped shrubs with flower stalks arising from upper crown portions; leaves broadly cuneate to spatulate; average persistent leaf length is 4.0 times its width; blooming may begin in July; odor slightly pungent to pleasantly mintlike; occurs from 1 400 to 3 000 m in deep well-drained soils ..... *A. tridentata* ssp. *vaseyana* (mountain big sagebrush)

ECOLOGY OF THE SAGEBRUSH TAXA

Black sagebrush Artemisia nova occurs on lower foothills, alluvial fans, benches and on mountain ridges. The soils supporting black sagebrush have a high content of calcium carbonate in the profile usually derived from a dolomite or limestone parent material. The elevation range is from 6,500 ft. to 8,500 ft. with high surface and subsurface rock content. Associated species found with black sagebrush are commonly Indian ricegrass, bluebunch wheatgrass, thurber's needlegrass and Wyoming big sagebrush on the lower elevation areas and sandberg's bluegrass and Idaho fescue on the upper elevation areas. Black sagebrush is less than 20 inches high and has a paniculate influorescence with persistent, brown seed stalks. The leaves are dark green and have numerous resin dots that can be detected easily with a 10x hand lens. The leaves upon crushing are sticky and have a somewhat sweet smell.

Low sagebrush, Artemisia arbuscula ssp. arbuscula, occurs predominately on mountain ridges of non-calcareous origin. It can occur on lower foothills and benches on soils with a thick illuvial clay horizon and high surface and subsurface rock content. Elevation ranges from low sagebrush are from 5,500 ft. to 8,500 ft. Associated species are commonly bluebunch wheatgrass, sandberg's bluegrass and Idaho fescue. Low sagebrush is an even topped shrub usually 20 inches high with a spicate or racemose influorescence.

Early or alkali sagebrush Artemisia longiloba, occurs on similar soils as low sagebrush having a thick illuvial clay horizon. The most common occurrence for alkali sagebrush is in north-central Elko County on low rolling foothills ranging in elevation from 5,600 ft. to 6,500 ft. Associated species occurring with alkali sagebrush are thurber's needlegrass, Idaho fescue and bluebunch

wheatgrass. Flowering of early or alkali sagebrush is in July and August whereas low sagebrush flowers in September and October. Early sagebrush is less than 20 inches high and has a racemose or spicate influorescence.

Wyoming big sagebrush, Artemisia tridentata ssp. wyomingensis, is the most drought tolerant member of the sagebrush taxa. It most commonly occurs on rolling uplands from 4,500 ft. to 6,200 ft. with annual precipitation averaging between 7 and 10 inches. Associated species are bluebunch wheatgrass, Indian ricegrass and thurber's needlegrass. Wyoming big sagebrush is an uneven topped shrub with flower stalks arising throughout the crown. The leaf margins are belled outwards and flower stalks are short and compressed.

Basin big sagebrush, Artemisia tridentata, ssp. tridentata, usually occurs in lowland areas or drainages on deep well drained soils from 5,900 ft. to 6,400 ft. Basin big sagebrush can reach heights of 4 ft. to 6 ft. and occasionally to 8 ft. Associated species are Great Basin wildrye, and streambank wheatgrass. This shrub also has an uneven topped appearance with the flower stalks arising throughout the crown. It has an open panicle and the vegetative stalks originating from the same point on a branch are greater than half the length of the flower stalks. The leaves are wedge-shaped with straight margins and are widest at the lobed tips.

Mountain big sagebrush, Artemisia tridentata ssp. vaseyana, occurs most frequently on deep-well drained soils of upper foothills and mountainous areas above 6,400 ft. Associated species are Basin wildrye, Idaho fescue, columbia needlegrass, snowberry and bitterbrush. Mountain big sagebrush is an even topped appearing shrub with flower stalks arising from the upper crown and extending above the foliage. The vegetative stalks are less than half the length of the flower stalks with a panicle influorescence and straight leaf margins.

Table . KEY TO SAGEBRUSH COMMUNITY TYPES OF THE HUMBOLDT NATIONAL FOREST

1. *Artemisia nova* is the dominant sagebrush species. 2

1. *Artemisia nova* is not the dominant sagebrush species. 3

2a. *Sitanion hystrix* and *Poa nevadensis* are the dominant grasses. *Atriplex confertifolia* and *Ephedra nevadensis* are generally conspicuously present.

ARTEMISIA NOVA/ATRIPLEX CONFERTIFOLIA/SITANION HYSTRIX c.t.

2b. *Oryzopsis hymenoides* and *Sitanion hystrix* are the dominant grasses. *Atriplex confertifolia* and *Ephedra nevadensis* are lacking or present in small amounts.

ARTEMISIA NOVA/ORYZOPSIS HYMENOIDES c.t.

2c. *Agropyron spicatum* is the dominant grass. *Poa sandbergii* is conspicuously present and may replace *A. spicatum* in dominance on some sites.

ARTEMISIA NOVA/AGROPYRON SPICATUM c.t.

3. *Artemisia arbuscula* is the dominant sagebrush species 4

3. *Artemisia arbuscula* is not the dominant sagebrush species 5

4a. *Agropyron spicatum* is the dominant grass. *Poa sandbergii* and *Poa fendleriana* are conspicuously present and may replace *A. spicatum* in dominance on some sites.

ARTEMISIA ARBUSCULA/AGROPYRON SPICATUM c.t.

4b. *Festuca idahoensis* is the dominant grass. *Poa sandbergii* is conspicuously present and may replace *F. idahoensis* in dominance on some sites.

ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS/POA SANDBERGII c.t.

4c. *Festuca idahoensis* is the dominant grass. *Agropyron spicatum* is conspicuously present with *Poa sandbergii* absent or present in only small amounts.

ARTEMISIA ARBUSCULA/FESTUCA IDAHOENSIS c.t.

5. *Artemisia longiloba* is the dominant sagebrush species. *Festuca idahoensis* is the dominant understory grass with *Agropyron spicatum* occurring in varying amounts.

ARTEMISIA LONGILOBA/FESTUCA IDAHOENSIS c.t.

5. *Artemisia longiloba* is not the dominant sagebrush species 6

6. *Artemisia tridentata* spp. *wyomingensis* is the dominant sagebrush species. 7

6. *Artemisia tridentata* spp. *wyomingensis* is not the dominant sagebrush species 8

7a. *Sitanion hystrix* is the dominant grass.

ARTEMISIA WYOMINGENSIS/SITANION HYSTRIX c.t.

7b. *Poa sandbergii* is the dominant grass.

ARTEMISIA WYOMINGENSIS/POA SANDBERGII c.t.

7c. *Agropyron spicatum* is the dominant grass with *Festuca idahoensis* occurring in varying amounts.

ARTEMISIA WYOMINGENSIS/AGROPYRON SPICATUM c.t.

8. *Artemisia tridentata* spp. *tridentata* is the dominant sagebrush species. . 9

8. *Artemisia tridentata* spp. *tridentata* is not the dominant sagebrush species 10

9a. *Agropyron spicatum* is the dominant grass. *Bromus tectorum* is conspicuously present and may replace *A. spicatum* in dominance on some sites.

ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM c.t.

9b. *Festuca idahoensis* is the dominant grass. *Agropyron spicatum* is present in varying amounts.

ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS c.t.

10. *Artemisia tridentata* spp. *vaseyana* is the dominant sagebrush species. *Symphoricarpos oreophilus* is usually absent, or if present, it does not contribute significantly to the shrub component (i.e. less than 3 percent canopy cover). 11

10. *Artemisia tridentata* spp. *vaseyana* is the dominant sagebrush species. *Symphoricarpos oreophilus* is conspicuously present, or if lacking, *Amelanchier alnifolia* is usually present 12

11a. *Agropyron spicatum* is the dominant grass. *Poa fendleriana* and *Poa sandbergii* are conspicuously present and may share dominance with *A. spicatum* on some sites. *Festuca idahoensis* is usually absent, or if present, it occurs in trace amounts. *Purshia tridentata* is commonly present in varying amounts.

ARTEMISIA VASEYANA/AGROPYRON SPICATUM c.t.

11a(1). *Purshia tridentata* is absent, or if present, it occurs in trace amounts. *Poa fendleriana* shares dominance with *Agropyron spicatum* on most sites.

POA FENDLERIANA phase

11a(2). *Purshia tridentata* is conspicuously present, usually with canopy cover greater than 5 percent. *Poa fendleriana* shares dominance with *Agropyron spicatum* on most sites.

PURSHIA TRIDENTATA phase

11a(3). *Purshia tridentata* is commonly present, usually with canopy cover greater than 3 percent. *Poa fendleriana* is absent, or if present, it occurs in trace amounts. *Balsamorhiza sagittata* is the dominant forb on most sites.

BALSAMORHIZA SAGITTATA phase

11b. *Festuca idahoensis* is the dominant grass. *Agropyron spicatum* is commonly present, in varying amounts. *Purshia tridentata* is usually absent.

ARTEMISIA VASEYANA/FESTUCA IDAHOENSIS c.t.

11b(1). *Purshia tridentata* is usually absent, or if present, it occurs in trace amounts. *Lupinus caudatus* is commonly the dominant forb species. *Lupinus argenteus* is usually absent, or if present, it occurs in trace amounts.

LUPINUS CAUDATUS phase

11b(2). *Purshia tridentata* is usually absent, or if present, it occurs in trace amounts. *Lupinus argenteus* is commonly the dominant forb species. *Lupinus caudatus* is usually absent, or if present, it occurs in trace amounts.

LUPINUS ARGENTEUS phase

11b(3). *Purshia tridentata* is commonly present, usually with canopy cover greater than 5 percent. *Lupinus* species are not dominant forb components on most sites.

PURSHIA TRIDENTATA phase

11c. *Elymus cinereus* is the dominant grass. Forb species are generally abundant with *Balsamorhiza sagittata* and *Wyethia amplexicaulis* sharing dominance with *E. cinereus* on some sites.

ARTEMISIA VASEYANA/ELYMUS CINEREUS c.t.

12. *Artemisia tridentata* spp. *vaseyana* is the dominant sagebrush species. *Symphoricarpos oreophilus* is conspicuously present, usually with canopy cover greater than 3 percent. *Balsamorhiza sagittata* is commonly present, in varying amounts 13

13a. *Agropyron spicatum* is the dominant grass with *Poa fendleriana* conspicuously present,. *Festuca idahoensis* may replace *A. spicatum* in dominance on some sites. Grass species occur in higher abundance than forb species on most sites.

ARTEMISIA VASEYANA/SYMPHORICARPOS OREOPHILUS/AGROPYRON SPICATUM c.t.

13b. *Bromus carinatus* is the dominant grass. *Festuca idahoensis*, *Agropyron trachycaulum* and *Elymus cinereus* are conspicuously present, and may replace *B. carinatus* in dominance on some sites. Forb species occur with the same abundance as grasses on most sites.

ARTEMISIA VASEYANA/SYMPHORICARPOS OREOPHILUS/BROMUS CARINATUS c.t.

13b(1). Grass species occur in equal or higher abundance than forb species on most sites. *Agropyron trachycaulum* is commonly the dominant grass species present,. *Geranium viscosissimum* is usually absent, or if present, it occurs in trace amounts.

AGROPYRON TRACHYCAULUM phase

13b(2). Forb species occur in greater abundance than grass species on most sites. *Geranium viscosissimum* is commonly the dominant forb species present,.

GERANIUM VISCOSISSIMUM phase

List of sagebrush community types and abbreviated codes referred to in the text.

Abbreviated Code	Community Type
ARNO/ATCO/SIHY	Aretmisia nova/Atriplex confertifolia/Sitanion hystrix
ARNO/ORHY	A. nova/Oryzopsis hymenoides
ARNO/AGSP	A. nova/Agropyron spicatum
ARAR/AGSP	A. arbuscula/Agropyron spicatum
ARAR/FEID/POSA	A. arbuscula/Festuca idahoensis/Poa sandbergii
ARAR/FEID	A. arbuscula/Festuca idahoensis
ARLO/FEID	A. longiloba/Festuca idahoensis
ARWYO/SIHY	A. tridentata ssp. wyomingensis/Sitanion hystrix
ARWYO/POSA	A. tridentata ssp. wyomingensis/Poa sandbergii
ARWYO/AGSP	A. tridentata ssp. wyomingensis/Agropyron spicatum
ARTR/AGSP	A. tridentata ssp. tridentata/Agropyron spicatum
ARTR/FEID	A. tridentata ssp. tridentata/Festuca idahoensis
ARVA/AGSP	A. tridentata ssp. vaseyana/Agropyron spicatum
ARVA/FEID	A. tridentata ssp. vaseyana/Festuca idahoensis
ARVA/ELCI	A. tridentata ssp. vaseyana/Elymus cinereus
ARVA/SYOR/AGSP	A. t. ssp. vaseyana/Symphoricarpos oreophilus/Agropyron spicatum
ARVA/SYOR/BRCA	A. t. ssp. vaseyana/Symphoricarpos oreophilus/Bromus carinatus

ENVIRONMENTAL SETTING:

This ct is present on a wide variety of landforms, parent materials, and soils. It occurs on pediment slopes and low to high relief foothills with an elevation range of 6,000 to 10,000 ft. The geology consists primarily of Devonian age limestone and dolomite with minor amounts of rhyolite, sandstone, and quartzite also present. Annual precipitation is about 6 to 8 inches with the majority of plant growth occurring between the middle of April and the middle of May. This ct is found throughout most of the forest being most prevalent on the Ely Ranger District. It has not been found on the Jarbidge Ranger District.

SOILS:

The soils of this ct tent to be shallow to moderately deep with light to dark colored, gravelly loam A horizons and gravelly to very stony loam subsoils. They have low to moderate water holding capacities, with low to moderate soil fertility. Calcium carbonate levels are high with little available phosphorus present. They have higher organic carbon and nitrogen then the ARNO/ATCO/SIHY and ARNO/ORHY ct's. The ~~domestic~~ dominate soil types included in the ct are loamy-skeletal families of the Xerollic Calciorthids, Aridic Calcixerolls, lithic Xerorthents, Lithic Cryic Rendolls, and Calcic Cryoborolls.

MANAGEMENT IMPLICATIONS:

Management potentials in this ct are limited by low precipitation, low soil water holding capacities, and shallow depth to bedrock in areas. The soil of this type are variable with some sites possessing higher potentials for

management than others. Site specific interpretations for proposed management practices are critical within this ct.

VEGETATION:

This ct is dominated by the presence of Artemisia nova with some occurrence of Chrysothamnus viscidiflorus and Eriogonum microthecum. The understory species of forbs and grasses can be more diverse than the other Artemisia nova ct's. Agropyron spicatum is the most commonly occurring grass, with lesser amounts of Oryzopsis hymenoides, Poa fendleriana and Poa sandbergii occurring more readily when Agropyron spicatum loses its competitive edge. Some of the commonly occurring forbs of this ct are Phlox hoodii, Aste sp., Leptodactylon pungens, Arenaria kingii, Castilleja sp. and Astragalus purshii.

This ct is extremely sensitive to over use because of its desirable topographic location and lack of annual precipitation. Artemisia nova ct's in excellent condition provide a diversity of forbs and grasses for wildlife and cattle during the grazing season. Once the competitive grass and forb cover is lost, revegetation and natural plant regeneration is slow if not impossible. Some of the ct's with less surface rock and deeper soils may be desirable for drill seeding with Agropyron desertorum. These ct's are susceptible to invasion by Bromus tectorum and also vulnerable to high surface run-off due to lack of vegetative cover.

ARNO/ORHY

ENVIRONMENTAL SETTING:

This ct occurs on moderately dissected pediment slopes and alluvial fans within an elevation range of 6,000 to 7,600 ft. The geology consists primarily of Quaternary age alluvium with limestone and dolomite out wash materials from higher elevations. Annual precipitation is about 6 inches with the majority of plant growth occurring between the first of April and the first of May. The ct is found throughout the Ely Ranger District with most sites being sampled on Snake Range.

SOILS:

The soils of this ct tend to be shallow to moderately deep with light colored, gravelly loam A horizons and gravelly to very gravelly loam subsoils. They have low water holding capacities and low soil fertility. Calcium carbonate levels are high, with phosphorus and nitrogen being limiting to plant growth in the spring. The dominate soil types included in the ct are loamy-skeletal families of the Xerollic Paleorthids, Xerollic Camborthids, Xerollic Calciorthids, and Typic Calciorthids.

MANAGEMENT IMPLICATIONS:

Management potential in this ct are limited by the low effective precipitation present and the low water holding capacity of the soils. Hardpans are present between 12 and 24 inches on many sites which will hinder drill seeding efforts.

ARNO/ATCO/SIHY

ENVIRONMENTAL SETTING:

This ct occurs on strongly dissected pediment slopes within an elevation range of 5,800 to 6,900 ft. The geology consists primarily of Quarternary age alluvium and beach deposits which are highly calcareous. Annual precipitation is about 6 inches with the majority of plant growth occurring between the first of April and the first of May. The ct is limited in distribution being confined to the Snake and Grant Ranges of the Ely Ranger District.

SOILS:

The soils of this ct tend to be moderately deep to deep, with light colored gravelly sandy loam A horizons and gravelly to very gravelly loam subsoils. They have low water holding capacities, and low soil fertility. Calcium carbonate levels are high with phosphorus and nitrogen being limited to plant growth in the spring. The dominate soil types included in the ct are sandy, coarse loamy and loamy-skeletal families of the Xerollic Haplargids, Xerollic Calciorthids, Lithic Camborthids, Typic Xerorthents and Typic Torripsamments.

MANAGEMENT IMPLICATIONS:

Management potentials in this ct are limited by the low effective precipitation present and the low water holding capacity of the soils.

VEGETATION:

This ct is dominated by the presence of Artemisia nova with lesser amounts of Chrysothamnus viscidiflorus, Cowania mexicana and Ephedra viridis and nevadensis. The dominate understory grass is Oryzopsis hymenoides with in some cases an almost equal amount of Bromus tectorum occurring along with Sitanion hystrix. Some of the more commonly occurring forbs on the site are Eriogonum caespitosum, Arabis holboelli, Phlox longifolia and Aster sp.

This ct is limited like many of the other Artemisia nova community types from lack of rainfall and in many cases a restrictive layer or hardpan. Species diversity appear to be slightly lower than in the ARNO/AGSP ct with lower soil fertility levels and an increase in Sitanion hystrix and Bromus tectorum in areas of heavy use. This ct has a higher occurrence of bare ground and a lower total production (lbs./acre) rate than the other Artemisia nova ct's. Average total production for this ct is 225 lbs./acre in low rainfall years to 600 lbs./acre in moderate to high years.

ARNO/ATCO/SIHY

VEGETATION:

This ct is characterized by the presence of Artemisia nova and Atriplex confertifolia in equal amounts. Other shrub species occurring are Ephedra nevadensis, Cowania mexicana and Chrysothamnus viscidiflorus. The dominate grass species in this ct is Sitanion hystrix with a high occurrence of Oryzopsis hymenoides, Poa nevadensis and Poa sandbergii. Some of the commonly occurring forbs in this ct are Lupinus argenteus, Phlox longifolia, Castilleja sp. and Senecio multilobatus.

This ct has a similar species composition to that of ARNO/ORHY but is thought to be considered separate because of the high occurrence of Atriplex confertifolia. Both the ARNO/ORHY ct and ARNO/ATCO/SIHY ct occur on highly calcareous soils of strongly dissected pediment slopes. Again, the management potentials for this CT are highly limited due to lack of annual precipitation. If we were to consider classifying the ARNO/ORHY ct and the ARNO/ATCO/SIHY ct into habitat-types, they would most likely be the same. Average total production for this ct is approximately 200-300 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occurs on steep foothills and mountain sideslopes within an elevation range of 6,000 to 9,600 ft. The geology consists primarily of Cambrian age quartzite and shale with some Jurassic age granitics present. Annual precipitation is about 8 to 12 inches with the majority of plant growth occurring between the middle of April and the middle of May. The ct is found throughout the Forest being most prevalent on the Ely Ranger District.

SOILS:

The soils of this ct tend to be shallow to moderately deep with dark colored gravelly loam A horizons and gravelly to very stony clay loam subsoils. They have low to moderate water holding capacities with low to moderate soil fertility. Calcium carbonate and phosphorus levels are low, with organic matter and nitrogen contents being low to moderate. The dominate soil types included in the ct are loamy-skeletal families of the Aridic Argixerolls, Typic Cryoborolls, Argic Cryoborolls, and Argic Lithic Cryoborolls.

MANAGEMENT IMPLICATION:

Management potential in this ct are limited by high subsoil rock content and shallow depth to bedrock in areas.

VEGETATION:

This ct is characterized by the dominance of Artemisia arbuscula with lesser amounts of Chrysothamnus viscidiflorus and Eriogonum microthecum. The dominate grass for this ct is Agropyron spicatum with a high occurrence of Poa fendleriana and Poa sandbergii. The most commonly occurring forbs are Haplopappus acaulis, Senecio multilobatus, Eriogonum caespitosum and Antennaria microphylla.

This ct occurs commonly throughout the forest in areas more xeric than are capable of supporting a ARAR/FEID ct. This ct is desirable for foraging by both cattle and wildlife. Artemisia arbuscula is increasingly more palatable than Artemisia nova. The management potentials for this ct are slightly greater than those of the ARNO ct's because of the increased annual precipitation. However, many of these ct's occur on steep, rocky ridges making drill seeding nearly impossible. Many of the Artemisia arbuscula ct's contain a large amount of clay in the subsurface horizon making early grazing on wet soils highly susceptible to trampling. Natural regeneration in this ct is fairly successful considering there is an adequate seed source and favorable conditions. The average total production for this ct is approximately 400-500 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occurs on high relief foothills and mountain sideslopes within an elevation range of 5,000 to 10,300 ft. The geology consists primarily of Tertiary age rhyolite with minor amounts of Cambrian age quartzite and limestone present. Annual precipitation is about 8 to 12 inches with the majority of plant growth occurring between the first of May and the first of June. This ct is found throughout the Forest being most prevalent on the Santa Rosa and Independence Mountain Ranges.

SOILS:

The soils of this ct tend to be shallow to moderately deep with dark colored gravelly silt loam A horizons and gravelly to very stony silt clay loam subsoils. They have low to moderate water holding capacities and low to moderate soil fertility. Calcium carbonate and phosphorus levels are low, with organic matter and nitrogen contents being low to moderate. The dominate soil types include loamy-skeletal and clayey-skeletal families of the Typic Argixerolls, Lithic Argixerolls, Typic Palexerolls and Typic Cryoborolls.

MANAGEMENT IMPLICATIONS:

Management potentials in this ct are limited by high subsoil rock content and shallow depth to bedrock in areas. Some sites have very heavy clay subsoils which act to restrict the rooting depth of some plant species.

ARAR/FEID/POSA

VEGETATION:

This ct is characterized by the presence of Artemisia arbuscula as the dominant shrub and small amounts of Chrysothamnus viscidiflorus and Eriogonum microthecum. The dominant grass on the ct is Festuca idahoensis with almost equal amounts of Poa sandbergii. The most commonly occurring forbs are Eriogonum caespitosum, Penstomen, Phlox longifolia and Castilleja chromosa.

This ct occurs on more mesic sites than the ARAR/AGSP ct thusly contributing to a slightly larger species diversity. A high amount of coarse fragments in the B horizon is very common in this ct, making re-establishment of native vegetation difficult. There is a high water holding capacity from the large amounts of clay in the subsurface horizon making early grazing a risky undertaking in terms of possible irreparable damage to the vegetation. The average total production for the ct is approximately 400-500 lbs./acre.

ARAR/FEID

ENVIRONMENTAL SETTING:

This ct occurs on low to high relief foothills, and mountain sideslopes within an elevation range of 5,800 to 8,000 ft. The geology consists primarily of Tertiary age rhyolite and welded tuffs, with minor amounts of Cambrian age quartzite present. Annual precipitation is about 12 to 16 inches with the majority of plant growth occurring between the middle of May and the middle of June. This ct is found mainly on the Mountain City and Jarbidge Ranger Districts.

SOILS:

The soils of this ct tend to be shallow to moderately deep with dark colored gravelly loam A horizons and gravelly to very gravelly clay loam and clay subsoils. They have low to moderate water holding capacities and low to moderate soil fertility. Calcium carbonate and phosphorus levels are low with organic matter and nitrogen contents being low to moderate. They differ from the ARAR/FEID/POSA ct by having a lower C/N ratio and pH, while occupying more mesic sites. The dominate soil types include loamy-skeletal and clayey skeletal families of the Argic Cryoborolls, Typic Cryoborolls, Typic Argixerolls, Lithic Argixerolls and Lithic Cryoborolls.

MANAGEMENT IMPLICATIONS:

Management potentials are limited by high subsoil rock content and shallow depth to bedrock in areas. Some sites have very heavy clay subsoil which act to restrict rooting depths of some plant species. These soils are easily compacted and may present problems to management if grazed too early in the spring.

ARAR/FEID

VEGETATION:

This ct is dominated by the presence of Artemisia arbuscula with lesser amounts of Artemisia tridentata ssp. vaseyana and Chrysothamnus viscidiflorus. The dominant grass for this ct is Festuca idahoensis with smaller occurrences of Agropyron spicatum and Sitanion hystrix. Poa sandbergii is not a component of this ct. The commonly occurring forbs for this ct are Wyethia amplexicaulis, Antennaria microphylla, Senecio integerrimus and Achillea millefolium.

This ct is similar to the ARAR/FEID/POSA ct except for the absence of Poa sandbergii. In some cases where topography and lack of subsurface rock content allow, cultivation may be possible. This ct provides an excellent source of feed for mule deer and domestic sheep. The average total production of this ct is approximately 500-550 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occurs on low relief foothills within an elevation range of 6,000 to 6,500 ft. The geology consists primarily of Quaternary age alluvium and Tertiary age rhyolite. Annual precipitation is about 8 to 12 inches with the majority of plant growth occurring between the first of May and the middle of June. This ct appears to be restricted to the Mountain City Ranger District.

SOILS:

The soils of this ct tend to be moderately deep to deep with dark colored gravelly silt loam A horizons and stony clay loam to clay subsoils. They have moderate water holding capacities and low to moderate soil fertility. Calcium carbonate and phosphorus levels are low with organic matter and nitrogen contents being low to moderate. The dominate soil types include clayey and clayey-skeletal families of the Typic Argixerolls, Lithic Argixerolls, and Aridic Palexerolls.

MANAGEMENT IMPLICATIONS:

Management potentials are limited by very heavy clay subsoils and shallow depth to bedrock in areas. These soils are easily compacted and many present problems to management if grazed too early in the spring.

VEGETATION:

This ct is characterized by the dominance of Artemisia longiloba. In some cases, Artemisia arbuscula and Artemisia tridentata ssp. vaseyana can occur in lesser amounts. The dominant grass for this ct is Festuca idahoensis with some occurrence of Agropyron spicatum and Poa sandbergii. The most commonly occurring forbs are Lupinus caudatus, Eriogonum heracleoides, Crepis acuminata and Phlox longifolia.

This ct differs from the Artemisia arbuscula ct's in that it is restricted to claypan soils. Because of the high clay content, trampling in early spring could be a factor for this ct. For the most part, this ct is located on gentle to slightly rolling terrain so surface runoff is not thought to be a problem. Some success has been noted in seeding this ct via rangeland drill especially in areas where moisture is not a limiting factor. The average total production for this ct is approximately 450 lbs./acre.

ARWYO/SIHY

ENVIRONMENTAL SETTING:

This ct occurs on strongly dissected alluvial fans and low relief foothills within the elevation range of 6,000 to 7,000 ft. The geology consists primarily of Quaternary age alluvium. Annual precipitation is about 8 to 12 inches with the majority of plant growth occurring between the middle of April and the middle of May. This ct is most abundant on the Ely and Santa Rosa Ranger Districts.

SOILS:

The soils of this ct tend to be deep with light colored gravelly sandy loam A horizons and very gravelly to very stony loam and clay loam subsoils. They have moderate water holding capacities and low soil fertility. Calcium carbonate levels are high throughout the soil, with phosphorus and nitrogen being limiting to plant growth in the spring. The dominate soil types include fine-loamy and loamy-skeletal families of the Xerollic Durargids, Xerollic Haplargids and Calcic Argixerolls. This ct coexists with ARNO dominated ct's by occupying more mesic soils with higher moisture holding capacities.

MANAGEMENT IMPLICATIONS:

Management potentials are limited primarily by the low effective precipitation present. High soil pH and calcium carbonate levels also limit the performance of certain plant species.

VEGETATION:

This ct is characterized by the dominance of Artemisia tridentata ssp. wyomingensis and lesser amounts of Chrysothamnus viscidiflorus. The dominant grass is Sitanion hystrix with some occurrence of Elymus cinereus and Poa sandbergii. The most commonly occurring forbs in this ct are Lupinus argenteus, Senecio integerrimus, Phlox hoodii and Delphinium andersonii.

This ct is best represented on lower elevation lowlands to slightly rolling terrain. It has not been determined whether or not Sitanion hystrix is a climax or subclimax species. When considering this ct for a potential natural community it should be kept in mind that the (PNC) may actually be different from the ct. If Sitanion hystrix occurs solely with Artemisia tridentata ssp. wyomingensis that it is fairly safe to assume the (PNC) will be the same. Some success has been noted on drill seeding wyomingensis sites with Agropyron spicatum where moisture is not a limiting factor. The total average production for this ct is approximately 550-600 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occurs along stream bottoms and depression areas of high relief foothills, within an elevation range of 5,500 to 6,500 ft. The geology consists primarily of Tertiary age rhyolitic flows and shallow intrusive rocks. Annual precipitation is about 12 to 16 inches with the majority of plant growth occurring between the first of May and the middle of June. This ct is found at lower elevations throughout the Forest.

SOILS:

The soils of this ct tend to be deep with dark colored gravelly loam A horizons and gravelly loam subsoils. They have moderate to high gravelly loam subsoils. They have moderate to high water holding capacities and moderate soil fertility. Calcium carbonate levels are low with moderate to high levels of phosphorus, organic matter and nitrogen present. The dominate soil types include fine-loamy families of the Typic Haploxerolls and Pachic Haploxerolls.

MANAGEMENT IMPLICATIONS:

Management potentials are limited primarily by the low effective precipitation present, however this is compensated for by subsurface water flow in areas. This ct tends to receive early grazing use with the expansion of BRTE onto disturbed sites being a constant problem.

VEGETATION:

This ct is characterized by the presence of Artemisia tridentata ssp. tridentata. In some settings there will be occurrences of Purshia tridentata and Chrysothamnus viscidiflorus. The dominant perennial grass for this ct is Agropyron spicatum with a high percentage of Bromus tectorum and Sitanion hystrix with lesser amounts of Elymus cinereus. The dominant forbs on the majority of the ct's sampled were annuals with some occasional perennials.

This ct has been highly susceptible to over use in the past due to its topographic location and closeness to water. In general, these ct's are highly productive because of their fertile, well-drained soils. Revegetation of this ct would be successful if based on soils alone, however, the ever present Bromus tectorum and its incredibly competitive nature makes it almost impossible to reclaim this ct. When this ct is fenced from wildlife and cattle and drill seeded with Agropyron desertorum, A. intermedium or A. trichophorum the results have been successful. The total average production for this ct is 650-750 lbs./acre in good condition.

ENVIRONMENTAL SETTING:

This ct occurs along stream bottoms and depression areas of high relief foothills within an elevation range of 5,000 and 7,000 ft. The geology consists primarily of Quaternary age alluvium and Tertiary age rhyolitic flows. Annual precipitation is about 16 to 18 inches with the majority of plant growth occurring between the middle of May and the first of July. This ct is found at lower elevations primarily on the Mountain City and Jarbidge Ranger Districts.

SOILS:

The soils of this ct tend to be deep with dark colored gravelly silt loam A horizons and gravely silt loam and clay loam subsoils. They have high moisture holding capacities and soil fertility. Calcium carbonate levels are low with high levels of organic matter, nitrogen and phosphorus present. The dominate soil types include fine-loamy families of the Pachic Haploxerolls, Typic Haploxerolls and Pachic Argixerolls. The soils of this ct tend to occupy more mesic sties than those of the ARTR/AGSP ct.

MANAGEMENT IMPLICATIONS:

Few limitations to management are present within this ct. Early season grazing may lead to increased bare ground in this ct, however the expansion of BRTE is not as prevalent as is the case for the ARTR/AGSP ct.

ARTR/FEID

VEGETATION:

This ct is characterized by the presence of Artemisia tridentata ssp. tridentata and to lesser amounts, Chrysothamnus viscidiflorus and Rosa woodsii. The dominate grass on this ct is Festuca idahoensis, with some occurrence of Poa sandbergii, Agropyron trachycaulum and Elymus cinereus. The predominant forbs in this ct are Lupinus argenteus, Achillea millefolium and Lupinus caudatus.

This ct appears to occur in slightly more mesic conditions than the ARTR/AGSP ct. Mountain City and Jarbidge districts have the highest percentage of this ct. Moisture is not as limiting a factor in the northern half of the forest. Both ct's ARTR/AGSP and ARTR/FEID are highly susceptible to fire and very slow to recover. This ct does not appear to have quite the infestation of Bromus tectorum thus making revegetation attempts slightly better. The total average production for this ct is 850-950 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occupies a wide range of landforms, geology and soils. In general, it tends to occur on mountain sideslopes and foothills within an elevation range of 6,000 to 10,000 ft. The geology consists primarily of Cambrian age quartzite, limestone and shale as well as Tertiary age rhyolite and andesite. Annual precipitation is about 12 to 18 inches with the majority of plant growth occurring between the first of May and middle of June. This ct is found throughout the Forest.

SOILS:

The soils of this ct tend to be moderately deep to deep with dark gravelly sandy loam A horizons and very gravelly to extremely stony silt loam subsoils. They have moderate moisture holding capacities and moderate to high soil fertility. Calcium carbonate levels range from low to high with moderate nitrogen and phosphorus contents present. The dominate soil types include loamy-skeletal families of the Aridic Argixerolls, Typic Haploxerolls, Pachic Haploxerolls, Lithic Cryic Rendolls, Typic Cryoborolls, Argic Cryoborolls, and Pachic Cryoborolls.

MANAGEMENT IMPLICATIONS:

Management potentials are limited primarily by extremely rocky subsoils in areas. The soils which support this ct are extremely variable, hence site specific assessments of potential are required for most management practices.

VEGETATION:

This ct is characterized by the dominance of Artemisia tridentata ssp. vaseyana with lesser amounts of Purshia tridentata and Symphoricarpos oreophilus. The dominant grass for this ct is Agropyron spicatum with occurrences of Poa fendleriana, Elymus cinereus and Poa nevadensis. The most commonly occurring forbs on this ct are Balsamorhiza sagittata, Lupinus argenteus, Linum perenne and Crepis acuminata.

This ct has a wide range of occurrence and subsoil characteristics. In areas where subsoil rock content is low, some vegetative manipulation may be possible when not limited by steepness of slopes. South slopes of this ct are readily utilized by mule deer and cattle on winter range allowing some avenue for the introduction of Bromus tectorum onto these sites. When managing for an increase in cover of Artemisia tridentata ssp. vaseyana fire can be used to stimulate seed germination. The total average production for this ct is 700-800 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occurs on mountain sideslopes within an elevation range of 6,000 to 8,000 ft. The geology consists primarily of Cambrian age quartzite and soft sedimentary rocks. Annual precipitation is about 16 to 20 inches with the majority of plant growth occurring between the middle of May and the first of July. This ct is found primarily on the Mountain City Ranger District.

SOILS:

The soils of this ct tend to be moderately deep to deep with dark colored gravelly loam and very gravelly loam to clayloam subsoils. They have moderate to high moisture holding capacities and high soil fertility. Calcium carbonate levels are low with high levels of nitrogen and phosphorus present. The dominate soil types include loamy-skeletal families of the Argic Cryoborolls, Pachic Cryoborolls and Pachic Haploxerolls.

MANAGEMENT IMPLICATIONS:

Management potentials are limited primarily by high rock content of the subsoil in areas. This ct has high levels of available Zn which appears to favor forb production. These sites should respond well to most management practices.

VEGETATION:

This ct is characterized by the dominance of Artemisia tridentata ssp. vaseyana and lesser amounts of Purshia tridentata and Chrysothamnus viscidiflorus. The dominate grass on this ct is Elymus cinereus with a moderate amount of Agropyron spicatum and traces of Bromus carinatus. The most commonly occurring forbs in this ct are Balsamorhiza sagittata, Lupinus caudatus, Wyethia amplexicaulis and Helianthella uniflora.

This ct is predominately found on the Mountain City District. This ct as well as other mountain big sagebrush types are most preferred by mule deer for winter forage as well as providing an abundance of grass and forbs for domestic sheep and cattle. For this reason proper management is essential in maintaining a large species diversity. This ct has little constraints in vegetation manipulation with the exception of slope. As mentioned earlier, fire can play an important role in re-establishing native grasses and forbs when there is an already abundant seed source. In areas of low seed dispersal, broadcast seeding and chaining will provide an improved source of species provided its done at the proper time of year. The total average production for this ct is approximately 1000 lbs./acre.

ENVIRONMENTAL SETTING:

This ct occupies a wide range of landforms, geology, and soils. In general it tends to occur on mountain sideslopes within an elevation range of 5,600 to 9,000 ft. The geology consists primarily of Cambrian age sedimentary rocks and Tertiary age rhyolite and granitics. Annual precipitation is about 16 to 20 inches with the majority of plant growth occurring between the middle of May and the first of July. This ct is found on the northern sections of the Forest, being most prevalent on the Jarbidge and Mountain City Ranger Districts.

SOILS:

The soils of this ct tend to be moderately deep to deep with dark colored gravely loam A horizons and gravelly to very gravelly silt loam or clay loam subsoils. They have moderate to high moisture holding capacities and soil fertility. Calcium carbonate levels tend to be low with moderate to high nitrogen and phosphorus levels present. The dominate soil types include fine-loamy and loamy-skeletal families of the Pachic Cryoborolls, Typic Cryoborolls, Typic Haploxerolls and Typic Argixerolls. This ct tends to occupy more mesic sites than does the ARVA/AGSP ct.

MANAGEMENT IMPLICATIONS:

The management potentials presented for ARVA/AGSP ct apply to this type, with the exception that the ARVA/FEID ct has a slightly higher production potential. Burning in this type appears to stimulate AGSP, with little or no change in FEID.

VEGETATION:

This ct is characterized by the presence of Artemisia tridentata ssp. vaseyana with lesser amounts of Chrysothamnus viscidiflorus and Symphoricarpos oreophilus. The dominant grass in this ct is Festuca idahoensis with fairly high percentages of Agropyron spicatum and Poa nevadensis. The most commonly occurring forbs are Lupinus caudatus, Balsamorhiza sagittata, Eriogonum heracleoides and Lupinus argenteus.

This ct occurs in slightly more mesic settings than the ARVA/ELCI ct. A prime example of this ct occurs on the Pole Creek bench of the Jarbidge Range District. This ct can benefit greatly from fire when abundant understory species are present. On the contrary, when understory species are lacking, sagebrush cover can increase many-fold. This is an important ct for wildlife winter range on certain districts, for this reason caution should be used in vegetation manipulation to account for all species concerned. There are no real limiting factors for management potential in this ct. The total average production for this ct is approximately 700-750 lbs./acre.

ARVA/SYOR/AGSP

ENVIRONMENTAL SETTING:

The ct occurs on mountain sideslopes within an elevation range of 6,600 to 9,000 ft. The geology consists primarily of Cambrian age quartzite, limestone and shale as well as Tertiary age rhyolite and andesite. Annual precipitation is about 16 to 20 inches with the majority of plant growth occurring between the middle of May and the first of July. The ct is found throughout the Forest.

SOILS:

The soils of this ct tend to be deep with dark colored gravelly silt loam A horizons and gravely to very stony loam and clay loam subsoils. They have moderate to high moisture holding capacities and soil fertility. Calcium carbonate levels range from low to high with moderate levels of nitrogen and phosphorus present. The dominate soil types include loamy-skeletal families of the Typic Cryoborolls, Pachic Cryoborolls and Argic Pachic Cryoborolls.

MANAGEMENT IMPLICATIONS:

The soils of this ct possess few limitations for most management practices. High subsoil rock content acts to limit production potentials in some areas.

ARVA/SYOR/AGSP

VEGETATION:

This ct is characterized by the presence of Artemisia tridentata ssp. vaseyana and Symphoricarpos oreophilus in fairly equal amounts. Purshia tridentata and Chrysothamnus viscidiflorus also occur to a lesser degree. The dominant grass for this ct is Agropyron spicatum with some occurrence of Festuca idahoensis and Bromus carinatus. The most commonly occurring forbs are Balsamorhiza sagittata, Lupinus caudatus, Eriogonum heracleoides and Agoseris glauca.

This ct is more xeric in nature than the ARVA/SYOR/BRCA ct, but both may be considered bordering the mountain brush communities. This ct is important for summer and fall range for big game. There are no real limiting factors for this ct with the exception of some highly erosive soils derived from parent materials of granite and quartzite. The soils are pachic, deep, well-drained soils capable of supporting an abundant species diversity. The total average production for this ct is approximately 900 to 1000 lbs./acre.

ARVA/SYOR/BRCA

ENVIRONMENTAL SETTING:

This ct occurs on mountain sideslopes within an elevation range of 5,800 to 8,300 ft. The geology consists primarily of Cambrian age quartzite and soft sedimentaries and Tertiary age rhyolite. Annual precipitation is about 20 to 30 inches with the majority of plant growth occurring between the first of June and the middle of July. This ct is found primarily on the Mountain City and Jarbidge Ranger Districts.

SOILS:

The soils of this ct tend to be deep with dark colored gravelly loam A horizons and gravelly to very gravelly silt loam or clay loam subsoils. They have high moisture holding capacities and soil fertility. Calcium carbonate levels tend to be low with high levels of nitrogen, phosphorus and organic matter present. The dominate soil types include fine-loamy and loamy-skeletal families of the Pachic Cryoborolls and Argic Pachic Cryoborolls. This ct tends to occur on more mesic soils than does the ARVA/SYOR/AGSP ct.

MANAGEMENT IMPLICATIONS:

The soils of this ct possess few limitations for most management practices.

ARVA/SYOR/BRCA

VEGETATION:

This ct is characterized by the presence of Artemisia tridentata ssp. vaseyana and Symphoricarpos oreophilus. The dominant grass for this ct is Bromus carinatus with Elymus cinereus and Festuca idahoensis occurring at lesser amounts. The most commonly occurring forbs on this site are characteristically Geranium fremontii, Agastache urticifolia, Lupinus caudatus and Hackelia patens.

This ct occurs in a more mesic setting than the ARVA/SYOR/AGSP ct. There is even more evidence of a mountain brush community influence with the appearance of Prunus virginiana and Amelanchier alnifolia. This ct is an important summer and fall range for big game animals. There are no real limiting factors for management potential in this ct. The total average production for this type is approximately 1000-1200 lbs./acre.

DESCRIPTION OF ECOLOGICAL SCORECARDS

The following tables are ecological scorecards arranged by sagebrush-grass community-type on the Humboldt National Forest. These scorecards were compiled from the vegetation data gathered from the 400 sampling sites across the forest that were in good to excellent condition.

The ecological scorecards provide a listing of all species that occurred in the sites analyzed. The values provided for a particular species are averages obtained from sites where that species occurred in a particular community-type. The values in parenthesis are the mean values plus one standard deviation.

In assessing ecological status of a present stand of vegetation, similarity between the community-type and the present vegetation is necessary. The percent composition of the present vegetation is entered into the appropriate column dependent on the attribute measured (production or frequency). This value is then compared with the reference value for that species and attribute measured. If the species is undesirable for management, the mean value should be used. If the species is desirable, the mean plus one standard deviation can be used, essentially allowing up to that much of the species into the community-type. The lowest value of the reference stand and the present stand should be entered in the column to the right. This column is then summed, and the number between 0 and 100 is obtained. This number can in turn be equated to these guidelines: 0-25% early seral, 25-50% mid seral, 50-75% late seral and 75-100% community-type state.

In defining what ecological stage of development a particular area is in, resource managers can more appropriately plan future strategies for maintaining and improving the rangeland resource.

Table . ARNO/AGSP CT Prevalent Species List (n = 42).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia nova	ARNO	57 (19)	16 (5)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	5 (7)	6 (5)	____	____	____	____
Eriogonum microthecum	ERMI	1	2 (2)	____	____	____	____
Others	Others	5/ea.	3/ea.	____	____	____	____
Grasses							
Agropyron spicatum	AGSP	12 (11)	11 (7)	____	____	____	____
Poa sandbergii	POSA	10 (8)	16 (8)	____	____	____	____
Poa fendleriana	POFE	6 (7)	6 (8)	____	____	____	____
Sitanion hystrix	SIHY	3 (2)	7 (4)	____	____	____	____
Bromus tectorum	BRTE	3 (4)	10 (8)	____	____	____	____
Oryzopsis hymenoides	ORHY	2 (1)	3 (2)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Phlox hoodii	PHHO	6 (4)	7 (5)	____	____	____	____
Erigeron pumilus	ERPU	3 (6)	6 (5)	____	____	____	____
Senecio multilobatus	SEMU	3 (5)	6 (5)	____	____	____	____
Happlopappus acaulis	HAAC	2 (3)	7 (5)	____	____	____	____
Aster spp.	ASTER	2 (3)	2 (2)	____	____	____	____
Leptodactylon pungens	LEPU	2 (3)	3 (2)	____	____	____	____
Arenaria kingii	ARKI	2 (1)	6 (4)	____	____	____	____
Linum perenne	LIPE	1 (2)	6 (5)	____	____	____	____
Cryptantha gracilis	CRGR	1 (1)	4 (4)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	6 (4)	____	____	____	____
Astragalus purshii	ASPU	1 (3)	3 (4)	____	____	____	____
Annual spp.	ANN	1 (2)	5 (6)	____	____	____	____
Eriogonum ovalifolium	EROV	1 (1)	1 (1)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

able . ARNO/ORHY CT Prevalent Species List (n = 16).

pecies	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
<u>nrubs</u>							
rtemisia nova	ARNO	73 (19)	31 (9)	____	____	____	____
hrysothamnus viscidiflorus	CHVI	7 (8)	8 (6)	____	____	____	____
owania mexicana	COME	6 (6)	2 (1)	____	____	____	____
phedra viridis	EPVI	3 (9)	2 (1)	____	____	____	____
phedra nevadensis	EPNE	3 (2)	2 (1)	____	____	____	____
	Others	5/ea.	3/ea.	____	____	____	____
<u>rasses</u>							
ryzopsis hymenoides	ORHY	5 (5)	5 (5)	____	____	____	____
romus tectorum	BRTE	5 (5)	14 (13)	____	____	____	____
itanion hystrix	SIHY	4 (5)	16 (9)	____	____	____	____
. spicatum x S. hystrix	AGSI	2 (1)	13 (6)	____	____	____	____
thers	Others	3/ea.	5/ea.	____	____	____	____
<u>orbs</u>							
riogonum caespitosum	ERCA	5 (8)	1 (1)	____	____	____	____
nnual spp.	ANN	1 (1)	13 (11)	____	____	____	____
rabis holboelli	ARHO	1 (0)	6 (7)	____	____	____	____
hlox longiloba	PHLO	1 (1)	6 (4)	____	____	____	____
ster spp.	ASTER	1 (2)	1 (1)	____	____	____	____
riogonum ovalifolium	EROV	1 (1)	1 (1)	____	____	____	____
rigeron pumilus	ERPU	1 (1)	2 (2)	____	____	____	____
rabis sparsiflora	ARSP	1 (0)	2 (1)	____	____	____	____
ryptantha gracilis	CRGR	1 (0)	3 (2)	____	____	____	____
thers	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

lote: values provided correspond to mean and (standard deviation) respectively.

Table . ARNO/ATCO/SIHY CT Prevalent Species List (n = 12).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia nova	ARNO	64 (23)	19 (9)	____	____	____	____
Artemisia arbuscula	ARAR	18 (13)	10 (6)	____	____	____	____
Atriplex confertifolia	ATCO	17 (7)	7 (5)	____	____	____	____
Ephedra nevadensis	EPNE	10 (8)	3 (1)	____	____	____	____
Cowania mexicana	COME	9 (0)	3 (0)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	7 (9)	6 (5)	____	____	____	____
Others	Others	5/ea.	3/ea.	____	____	____	____
Grasses							
Sitanion hystrix	SIHY	6 (4)	9 (5)	____	____	____	____
Oryzopsis hymenoides	ORHY	6 (10)	9 (10)	____	____	____	____
Poa nevadensis	PONE	6 (6)	12 (12)	____	____	____	____
Poa sandbergii	POSA	4 (6)	10 (9)	____	____	____	____
Bromus tectorum	BRTE	1 (1)	14 (10)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Lupinus argenteus	LUAR	9 (11)	6 (0)	____	____	____	____
Annual spp.	ANN	4 (3)	23 (17)	____	____	____	____
Phlox longiloba	PHLO	2 (1)	11 (5)	____	____	____	____
Arabis holboelli	ARHO	1 (1)	4 (2)	____	____	____	____
Cryptantha gracilis	CRGR	1 (1)	5 (4)	____	____	____	____
Arabis sparsiflora	ARSP	1 (1)	4 (3)	____	____	____	____
Erigeron argenteus	ERAR	1 (1)	3 (2)	____	____	____	____
Castilleja chromosa	CACH	1 (1)	2 (2)	____	____	____	____
Senecio multilobatus	SEMU	1 (1)	1 (1)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARAR/AGSP CT Prevalent Species List (n = 27).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia arbuscula	ARAR	50 (18)	15 (4)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	5 (7)	4 (5)	____	____	____	____
Eriogonum microthecum	ERMI	2 (4)	3 (2)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Grasses							
Poa fendleriana	POFE	11 (10)	10 (9)	____	____	____	____
Poa sandbergii	POSA	9 (8)	13 (12)	____	____	____	____
Agropyron spicatum	AGSP	9 (10)	9 (6)	____	____	____	____
Sitanion hystrix	SIHY	6 (11)	8 (7)	____	____	____	____
Others	Others	5/ea.	5/ea.	____	____	____	____
Forbs							
Happlopappus acaulis	HAAC	4 (7)	5 (5)	____	____	____	____
Senecio multilobatus	SEMU	1 (1)	6 (7)	____	____	____	____
Eriogonum caespitosum	ERCA	1 (1)	6 (5)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	6 (6)	____	____	____	____
Erigeron pumilus	ERPU	2 (3)	5 (6)	____	____	____	____
Annual spp.	ANN	1 (1)	7 (6)	____	____	____	____
Lygodesmia spinosa	LYSP	1 (1)	4 (4)	____	____	____	____
Crepis acuminata	CRAC	1 (1)	2 (7)	____	____	____	____
Lomatium spp.	LOMZ	1 (1)	3 (4)	____	____	____	____
Astragalus purshii	ASPU	1 (1)	3 (3)	____	____	____	____
Castilleja chromosa	CACH	2 (3)	2 (2)	____	____	____	____
Arabis sparsiflora	ARSP	1 (1)	2 (1)	____	____	____	____
Antennaria microphylla	ANMI	1 (1)	2 (1)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARAR/AGSP CT Prevalent Species List (n = 27).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia arbuscula	ARAR	50 (18)	15 (4)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	5 (7)	4 (5)	____	____	____	____
Eriogonum microthecum	ERMI	2 (4)	3 (2)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Grasses							
Poa fendleriana	POFE	11 (10)	10 (9)	____	____	____	____
Poa sandbergii	POSA	9 (8)	13 (12)	____	____	____	____
Agropyron spicatum	AGSP	9 (10)	9 (6)	____	____	____	____
Sitanion hystrix	SIHY	6 (11)	8 (7)	____	____	____	____
Others	Others	5/ea.	5/ea.	____	____	____	____
Forbs							
Happlopappus acaulis	HAAC	4 (7)	5 (5)	____	____	____	____
Senecio multilobatus	SEMU	1 (1)	6 (7)	____	____	____	____
Eriogonum caespitosum	ERCA	1 (1)	6 (5)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	6 (6)	____	____	____	____
Erigeron pumilus	ERPU	2 (3)	5 (6)	____	____	____	____
Annual spp.	ANN	1 (1)	7 (6)	____	____	____	____
Lygodesmia spinosa	LYSP	1 (1)	4 (4)	____	____	____	____
Crepis acuminata	CRAC	1 (1)	2 (7)	____	____	____	____
Lomatium spp.	LOMZ	1 (1)	3 (4)	____	____	____	____
Astragalus purshii	ASPU	1 (1)	3 (3)	____	____	____	____
Castilleja chromosa	CACH	2 (3)	2 (2)	____	____	____	____
Arabis sparsiflora	ARSP	1 (1)	2 (1)	____	____	____	____
Antennaria microphylla	ANMI	1 (1)	2 (1)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARAR/FEID/POSA CT Prevalent Species List (n = 19).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia arbuscula	ARAR	39 (19)	14 (6)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	2 (1)	3 (2)	____	____	____	____
Eriogonum microthecum	ERMI	1 (1)	4 (3)	____	____	____	____
Others	Others	3/ea.	3/ea.	____	____	____	____
Grasses							
Festuca idahoensis	FEID	39 (15)	17 (7)	____	____	____	____
Poa sandbergii	POSA	9 (6)	15 (8)	____	____	____	____
Sitanion hystrix	SIHY	4 (2)	7 (4)	____	____	____	____
Agropyron spicatum	AGSP	4 (3)	5 (2)	____	____	____	____
Poa fendleriana	POFE	4 (2)	6 (5)	____	____	____	____
Others	Others	5/ea.	5/ea.	____	____	____	____
Forbs							
Eriogonum caespitosum	ERCA	5 (7)	5 (4)	____	____	____	____
Annual spp.	ANN	4 (4)	19 (6)	____	____	____	____
Penstemon spp.	PENZ	2 (1)	4 (4)	____	____	____	____
Arenaria kingii	ARKI	2 (1)	1 (0)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	5 (4)	____	____	____	____
Castilleja chromosa	CACH	1 (1)	3 (3)	____	____	____	____
Aster spp.	ASTER	1 (1)	1 (0)	____	____	____	____
Allium acuminatum	ALAC	1 (1)	1 (0)	____	____	____	____
Erigeron pumilus	ERPU	1 (1)	4 (4)	____	____	____	____
Agoseris glauca	AGGL	1 (1)	3 (4)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARAR/FEID CT Prevalent Species List (n = 19).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia arbuscula	ARAR	17 (13)	16 (8)	____	____	____	____
Artemisia tridentata ssp. vaseyana	ARVA	4 (3)	2 (1)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	4 (5)	3 (1)	____	____	____	____
Others	Others	5/ea.	3/ea.	____	____	____	____
Grasses							
Festuca idahoensis	FEID	49 (19)	25 (2)	____	____	____	____
Agropyron spicatum	AGSP	13 (13)	12 (8)	____	____	____	____
Sitanion hystrix	SIHY	2 (1)	4 (3)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Wyethia amplexicaulis	WYAM	8 (7)	2 (1)	____	____	____	____
Antennaria microphylla	ANMI	7 (4)	12 (6)	____	____	____	____
Lupinus argenteus	LUAR	3 (2)	8 (6)	____	____	____	____
Castilleja chromosa	CACH	3 (4)	6 (5)	____	____	____	____
Penstemon spp.	PENZ	2 (3)	6 (1)	____	____	____	____
Achillea millefolium	ACMI	1 (3)	7 (8)	____	____	____	____
Annual spp.	ANN	1 (1)	10 (6)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	7 (4)	____	____	____	____
Senecio integerrimus	SEIN	1 (1)	2 (1)	____	____	____	____
Lupinus caudatus	LUCA	1 (1)	6 (5)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARLO/FEID CT Prevalent Species List (n = 4).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia longiloba	ARLO	37 (20)	11 (6)	____	____	____	____
Artemisia arbuscula	ARAR	20 (10)	11 (6)	____	____	____	____
Artemisia tridentata ssp. vaseyana	ARVA	12 (12)	3 (3)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	1 (1)	2 (2)	____	____	____	____
Others	Others	3/ea.	3/ea.	____	____	____	____
Grasses							
Festuca idahoensis	FEID	27 (28)	16 (4)	____	____	____	____
Agropyron spicatum	AGSP	19 (19)	13 (17)	____	____	____	____
Poa sandbergii	POSA	14 (2)	18 (2)	____	____	____	____
Sitanion hystrix	SIHY	4 (1)	6 (2)	____	____	____	____
Others	Others	5/ea.	5/ea.	____	____	____	____
Forbs							
Lupinus caudatus	LUCA	8 (1)	7 (2)	____	____	____	____
Eriogonum heracleoides	ERHE	4 (6)	2 (3)	____	____	____	____
Crepis acuminata	CRAC	3 (4)	3 (5)	____	____	____	____
Phlox longifolia	PHLO	2 (1)	4 (1)	____	____	____	____
Lupinus argenteus	LUAR	2 (2)	1 (1)	____	____	____	____
Annual spp.	ANN	1 (1)	6 (6)	____	____	____	____
Arabis sparsiflora	ARSP	1 (1)	4 (1)	____	____	____	____
Lomatium spp.	LOMZ	1 (1)	7 (5)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARTR/AGSP CI Prevalent Species List (n = 6).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. tridentata	ARTR	28 (14)	7 (3)	____	____	____	____
Purshia tridentata	PUTR	2 (2)	2 (0)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	2 (0)	2 (1)	____	____	____	____
Others	Others	3/ea.	3/ea.	____	____	____	____
Grasses							
Bromus tectorum	BRTE	22 (19)	24 (9)	____	____	____	____
Agropyron spicatum	AGSP	9 (8)	8 (5)	____	____	____	____
Sitanion hystrix	SIHY	8 (13)	11 (9)	____	____	____	____
Elymus cinereus	ELCI	6 (6)	3 (2)	____	____	____	____
Poa sandbergii	POSA	5 (3)	10 (7)	____	____	____	____
Poa nevadensis	PONE	1 (1)	3 (0)	____	____	____	____
Others	Others	2/ea.	5/ea.	____	____	____	____
Forbs							
Annual spp.	ANN	5 (5)	20 (8)	____	____	____	____
Lithospermum ruderale	LIRU	3 (4)	2 (1)	____	____	____	____
Machaeranthera canescens	MACA	1 (1)	7 (0)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARTR/FEID CT Prevalent Species List (n = 8).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. tridentata	ARTR	20 (16)	5 (4)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	7 (7)	6 (5)	____	____	____	____
Rosa woodsii	ROWO	3 (3)	6 (4)	____	____	____	____
Others	Others	5/ea.	5/ea.	____	____	____	____
Grasses							
Festuca idahoensis	FEID	22 (15)	19 (8)	____	____	____	____
Poa sandbergii	POSA	11 (12)	10 (12)	____	____	____	____
Agropyron trachycaulum	AGTR	9 (4)	12 (0)	____	____	____	____
Elymus cinereus	ELCI	6 (6)	4 (2)	____	____	____	____
Agropyron spicatum	AGSP	5 (5)	4 (5)	____	____	____	____
Sitanion hystrix	SIHY	2 (2)	10 (10)	____	____	____	____
Bromus tectorum	BRTE	1 (1)	5 (0)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Lupinus argenteus	LUAR	5 (3)	10 (0)	____	____	____	____
Achillea millefolium	ACMI	4 (4)	7 (5)	____	____	____	____
Eriogonum heracleoides	ERHE	3 (3)	6 (2)	____	____	____	____
Antennaria microphylla	ANMI	2 (1)	4 (0)	____	____	____	____
Lupinus caudatus	LUCA	2 (3)	2 (1)	____	____	____	____
Penstemon spp.	PENZ	2 (1)	2 (1)	____	____	____	____
Annual spp.	ANN	1 (3)	10 (7)	____	____	____	____
Senecio integerrimus	SEIN	1 (1)	2 (1)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/AGSP CT Prevalent Species List (n = 63).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. vaseyana	ARVA	49 (20)	8 (7)	____	____	____	____
Purshia tridentata	PUTR	15 (11)	5 (4)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	6 (6)	5 (5)	____	____	____	____
Symphoricarpos oreophilus	SYOR	3 (2)	4 (4)	____	____	____	____
Eriogonum microthecum	ERMI	1 (1)	2 (4)	____	____	____	____
Others	Others	5/ea.	3/ea.	____	____	____	____
Grasses							
Agropyron spicatum	AGSP	11 (10)	13 (8)	____	____	____	____
Poa fendleriana	POFE	7 (6)	13 (9)	____	____	____	____
Elymus cinereus	ELCI	4 (4)	4 (3)	____	____	____	____
Bromus tectorum	BRTE	4 (4)	15 (16)	____	____	____	____
Poa sandbergii	POSA	3 (3)	7 (5)	____	____	____	____
Poa nevadensis	PONE	3 (3)	4 (3)				
Sitanion hystrix	SIHY	2 (0)	6 (6)				
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Balsamorhiza sagittata	BASA	12 (12)	4 (5)	____	____	____	____
Lupinus argenteus	LUAR	10 (11)	10 (4)	____	____	____	____
Aster spp.	ASTER	3 (6)	5 (4)	____	____	____	____
Linum perenne	LIPE	2 (3)	3 (2)	____	____	____	____
Annual spp.	ANN	2 (2)	2 (2)	____	____	____	____
Crepis acuminata	CRAC	1 (1)	4 (3)	____	____	____	____
Crepis occidentalis	CROC	1 (2)	4 (4)	____	____	____	____
Penstemon spp.	PENZ	1 (1)	3 (3)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	7 (5)	____	____	____	____
Castilleja chromosa	CACH	1 (1)	4 (2)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/AGSP CT - BASA Phase. Prevalent Species List (n = 16).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	48 (28)	____	____
Purshia tridentata	PUTR	11 (7)		
Chrysothamnus viscidiflorus	CHVI	6 (4)	____	____
Others	Others	5/ea.	____	____
Grasses				
Agropyron spicatum	AGSP	18 (14)	____	____
Elymus cinereus	ELCI	6 (6)	____	____
Bromus tectorum	BRTE	4 (4)	____	____
Sitanion hystrix	SIHY	3 (3)	____	____
Others	Others	3/ea.	____	____
Forbs				
Balsamorhiza sagittata	BASA	15 (7)	____	____
Lupinus argenteus	LUAR	8 (8)	____	____
Annual spp.	ANN	3 (3)	____	____
Crepis acuminata	CRAC	2 (3)	____	____
Phlox longifolia	PHLO	1 (1)	____	____
Hackelia patens	HAPA	1 (1)	____	____
Others	Others	1/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/AGSP CT - POFE Phase. Prevalent Species List (n = 22).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	57 (13)	____	____
Chrysothamnus viscidiflorus	CHVI	7 (5)	____	____
Others	Others	5/ea.	____	____
Grasses				
Agropyron spicatum	AGSP	8 (5)	____	____
Poa fendleriana	POFE	6 (4)	____	____
Poa nevadensis	PONE	4 (3)	____	____
Agropyron intermedium	AGIN	4 (3)	____	____
Stipa lettermanii	STLE	3 (2)	____	____
Elymus cinereus	ELCI	2 (1)	____	____
Poa sandbergii	POSA	2 (3)	____	____
Others	Others	2/ea.	____	____
Forbs				
Lupinus argenteus	LUAR	10 (7)	____	____
Aster spp.	ASTER	4 (8)	____	____
Machaeranthera canescens	MACA	3 (3)	____	____
Penstemon speciosus	PESP	2 (2)	____	____
Annual spp.	ANN	1 (2)	____	____
Phlox longifolia	PHLO	1 (1)	____	____
Eriogonum umbellatum	ERUM	1 (1)	____	____
Crepis acuminata	CRAC	1 (1)	____	____
Senecio multilobatus	SEMU	1 (1)	____	____
Others	Others	1/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/AGSP CT - PUTR Phase. Prevalent Species List (n = 21).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	50 (13)	____	____
Purshia tridentata	PUTR	16 (12)	____	____
Chrysothamnus viscidiflorus	CHVI	4 (4)	____	____
Symphoricarpos oreophilus	SYOR	3 (3)	____	____
Others	Others	3/ea.	____	____
Grasses				
Agropyron spicatum	AGSP	7 (6)	____	____
Poa fendleriana	POFE	7 (7)	____	____
Bromus tectorum	BRTE	3 (4)	____	____
Poa sandbergii	POSA	3 (7)	____	____
Agropyron smithii	AGSM	3 (2)	____	____
Poa nevadensis	PONE	2 (2)	____	____
Sitanion hystrix	SIHY	2 (2)	____	____
Others	Others	2/ea.	____	____
Forbs				
Lupinus argenteus	LUAR	8 (7)	____	____
Eriogonum heracleoides	ERHE	2 (3)	____	____
Crepis occidentalis	CROC	2 (2)	____	____
Aster spp.	ASTER	1 (3)	____	____
Crepis acuminata	CRAC	1 (1)	____	____
Senecio multilobatus	SEMU	1 (3)	____	____
Phlox longifolia	PHLO	1 (1)	____	____
Others	Others	1/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table · ARVA/ELCI CT Prevalent Species List (n = 9).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. vaseyana	ARVA	17 (7)	4 (2)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	7 (5)	4 (2)	____	____	____	____
Purshia tridentata	PUTR	7 (10)	5 (5)	____	____	____	____
Others	Others	5/ea.	3/ea.	____	____	____	____
Grasses							
Elymus cinereus	ELCI	12 (12)	9 (9)	____	____	____	____
Agropyron spicatum	AGSP	8 (8)	9 (5)	____	____	____	____
Bromus tectorum	BRTE	5 (4)	13 (11)	____	____	____	____
Bromus carinatus	BRCA	4 (4)	11 (6)	____	____	____	____
Poa sandbergii	POSA	2 (1)	3 (1)	____	____	____	____
Melica bulbosa	MEBU	1 (1)	8 (4)	____	____	____	____
Sitanion hystrix	SIHY	1 (1)	2 (1)	____	____	____	____
Others	Others	2/ea.	3/ea.	____	____	____	____
Forbs							
Balsamorhiza sagittata	BASA	24 (21)	9 (4)	____	____	____	____
Lupinus caudatus	LUCA	17 (14)	6 (0)	____	____	____	____
Wyethia amplexicaulis	WYAM	16 (24)	4 (5)	____	____	____	____
Annuals	ANN	9 (14)	28 (16)	____	____	____	____
Helianthella uniflora	HEUN	7 (4)	8 (4)	____	____	____	____
Lomatium dissectum	LODI	6 (7)	2 (1	____	____	____	____
Lithospermum ruderale	LIRU	5 (3)	3 (1)	____	____	____	____
Lupinus argenteus	LUAR	4 (4)	3 (3)	____	____	____	____
Agastache urticifolia	AGUR	3 (2)	4 (0)	____	____	____	____
Crepis acuminata	CRAC	3 (2)	6 (3)	____	____	____	____
Tragopogon dubius	TRDU	2 (2)	4 (1)	____	____	____	____
Others	Others	2/ea.	3/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/FEID CT Prevalent Species List (n = 66).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. vaseyana	ARVA	27 (18)	7 (5)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	4 (3)	4 (3)	____	____	____	____
Symphoricarpos oreophilus	SYOR	2 (2)	3 (2)	____	____	____	____
Others	Others	4/ea.	3/ea.	____	____	____	____
Grasses							
Festuca idahoensis	FEID	26 (14)	20 (17)	____	____	____	____
Agropyron spicatum	AGSP	10 (9)	10 (7)	____	____	____	____
Poa nevadensis	PONE	8 (10)	5 (4)	____	____	____	____
Poa sandbergii	POSA	5 (5)	5 (8)	____	____	____	____
Sitanion hystrix	SIHY	4 (5)	7 (6)	____	____	____	____
Elymus cinereus	ELCI	3 (3)	3 (2)	____	____	____	____
Bromus carinatus	BRCA	2 (2)	4 (4)	____	____	____	____
Others	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Lupinus caudatus	LUCA	12 (14)	8 (7)	____	____	____	____
Balsamorhiza sagittata	BASA	10 (11)	5 (3)	____	____	____	____
Lupinus argenteus	LUAR	5 (4)	10 (7)	____	____	____	____
Eriogonum heracleoides	ERHE	5 (5)	6 (6)	____	____	____	____
Castilleja chromosa	CACH	3 (5)	7 (6)	____	____	____	____
Antennaria microphylla	ANMI	3 (3)	6 (6)	____	____	____	____
Achillea millefolium	ACMI	3 (4)	5 (5)	____	____	____	____
Crepis acuminata	CRAC	3 (3)	3 (2)	____	____	____	____
Penstemon spp.	PENZ	2 (2)	4 (5)	____	____	____	____
Annual spp.	ANN	2 (3)	9 (7)	____	____	____	____
Allium acuminatum	ALAC	1 (1)	3 (5)	____	____	____	____
Phlox longifolia	PHLO	1 (1)	4 (3)	____	____	____	____
Others	Others	2/ea.	2/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/FEID CT - LUCA Phase. Prevalent Species List (n = 21).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	30 (23)	____	____
Chrysothamnus viscidiflorus	CHVI	4 (3)	____	____
Others	Others	4/ea.		
Grasses				
Festuca idahoensis	FEID	22 (14)	____	____
Poa nevadensis	PONE	9 (13)	____	____
Stipa columbiana	STCOL	7 (8)	____	____
Agropyron spicatum	AGSP	6 (8)	____	____
Poa fendleriana	POFE	6 (8)	____	____
Poa sandbergii	POSA	5 (5)	____	____
Sitanion hystrix	SIHY	3 (4)	____	____
Carex species	CAREX	1(2)	____	____
Others	Others	3/ea.	____	____
Forbs				
Lupinus caudatus	LUCA	14 (14)	____	____
Antennaria microphylla	ANMI	4 (5)	____	____
Achillea millefolium	ACMI	3 (5)	____	____
Castilleja chromosa	CACH	3 (2)	____	____
Hackelia patens	HAPA	3 (4)	____	____
Penstemon spp.	PENZ	2 (2)	____	____
Eriogenum heracleoides	ERHE	2 (2)	____	____
Annual spp.	ANN	2 (1)	____	____
Eriogonum umbellatum	ERUM	1 (1)	____	____
Others	Others	2/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/FEID CT - LUAR Phase. Prevalent Species List (n = 32).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	28 (17)	____	____
Chrysothamnus viscidiflorus	CHVI	5 (4)	____	____
Symphoricarpos oreophilus	SYOR	2 (2)	____	____
Others	Others	2/ea.	____	____
Grasses				
Festuca idahoensis	FEID	27 (15)	____	____
Agropyron spicatum	AGSP	12 (10)	____	____
Sitanion hystrix	SIHY	5 (6)	____	____
Agropyron trachycaulum	AGTR	4 (2)	____	____
Poa sandbergii	POSA	3 (2)	____	____
Bromus carinatus	BRCA	2 (2)	____	____
Others	Others	2/ea.	____	____
Forbs				
Eriogonum heracleoides	ERHE	6 (6)	____	____
Lupinus argenteus	LUAR	5 (4)	____	____
Castilleja chromosa	CACH	2 (5)	____	____
Achillea millefolium	ACMI	2 (4)	____	____
Annual spp.	ANN	2 (2)	____	____
Antennaria microphylla	ANMI	2 (2)	____	____
Allium acuminatum	ALAC	1 (2)	____	____
Penstemon spp.	PENZ	1 (1)	____	____
Phlox longifolia	PHLO	1 (1)	____	____
Others	Others	1/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/FEID CT - PUTR Phase. Prevalent Species List (n = 17).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	19 (12)	____	____
Purshia tridentata	PUTR	14 (7)	____	____
Artemisia arbuscula	ARAR	10 (5)	____	____
Chrysothamnus viscidiflorus	CHVI	3 (3)	____	____
Others	Others	3/ea.	____	____
Grasses				
Festuca idahoensis	FEID	28 (15)	____	____
Agropyron spicatum	AGSP	15 (11)	____	____
Poa sandbergii	POSA	6 (5)	____	____
Elymus cinereus	ELCI	4 (3)	____	____
Sitanion hystrix	SIHY	4 (6)	____	____
Others	Others	3/ea.	____	____
Forbs				
Balsamorhiza sagittata	BASA	6 (4)	____	____
Penstemon spp.	PENZ	4 (1)	____	____
Achillea millefolium	ACMI	3 (5)	____	____
Crepis acuminata	CRAC	3 (3)	____	____
Castilleja chromosa	CACH	3 (5)	____	____
Annual spp.	ANN	3 (5)	____	____
Eriogenum heracleoides	ERHE	3 (2)	____	____
Antennaria microphylla	ANMI	2 (1)	____	____
Others	Others	2/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

'able . ARVA/SYOR/AGSP CT Prevalent Species List (n = 22).

pecies	Code	Reference % Composition Production	Frequency	Measured % Composition Production	Frequency	Lowest Value Production	Frequency
hrubs							
rtemisia tridentata ssp. vaseyana	ARVA	36 (13)	5 (3)	____	____	____	____
ymphoricarpos oreophilus	SYOR	12 (10)	8 (6)	____	____	____	____
urshia tridentata	PUTR	5 (5)	5 (5)	____	____	____	____
hrysothamnus viscidiflorus	CHVI	5 (6)	2 (1)	____	____	____	____
riogonum microthecum	ERMI	2 (1)	2 (1)	____	____	____	____
thers	Others	5/ea.	3/ea.	____	____	____	____
rasses							
'estuca idahoensis	FEID	10 (9)	11 (5)	____	____	____	____
gropyron spicatum	AGSP	9 (7)	10 (8)	____	____	____	____
romus carinatus	BRCA	4 (4)	7 (4)	____	____	____	____
oa fendleriana	POFE	3 (3)	8 (4)	____	____	____	____
gropyron smithii	AGSM	2 (2)	5 (3)	____	____	____	____
thers	Others	3/ea.	5/ea.	____	____	____	____
orbs							
alsamorhiza sagittata	BASA	10 (14)	5 (4)	____	____	____	____
upinus caudatus	LUCA	10 (13)	6 (4)	____	____	____	____
riogonum heracleoides	ERHE	4 (6)	4 (4)	____	____	____	____
repis acuminata	CRAC	2 (3)	4 (3)	____	____	____	____
hlox longifolia	PHLO	1 (1)	8 (5)	____	____	____	____
nnual spp.	ANN	1 (1)	11 (8)	____	____	____	____
goseris glauca	AGGL	1 (1)	4 (3)	____	____	____	____
upinus argenteus	LUAR	1 (1)	6 (4)	____	____	____	____
iola spp.	VIOLA	1 (1)	5 (2)	____	____	____	____
thers	Others	2/ea.	4/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

lote: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/SYOR/BRCA CT Prevalent Species List (n = 47).

Species	Code	Reference % Composition Production	Reference % Composition Frequency	Measured % Composition Production	Measured % Composition Frequency	Lowest Value Production	Lowest Value Frequency
Shrubs							
Artemisia tridentata ssp. vaseyana	ARVA	22 (13)	5 (3)	____	____	____	____
Symphoricarpos oreophilus	SYOR	9 (9)	6 (4)	____	____	____	____
Purshia tridentata	PUTR	5 (5)	2 (2)	____	____	____	____
Amelanchier alnifolia	AMAL	5 (5)	2 (2)	____	____	____	____
Chrysothamnus viscidiflorus	CHVI	4 (4)	4 (3)	____	____	____	____
Grasses	Others	5/ea.	3/ea.	____	____	____	____
Bromus carinatus	BRCA	10 (5)	8 (6)	____	____	____	____
Elymus cinereus	ELCI	9 (8)	4 (4)	____	____	____	____
Festuca idahoensis	FEID	8 (9)	9 (8)	____	____	____	____
Agropyron spicatum	AGSP	8 (9)	8 (8)	____	____	____	____
Agropyron trachycaulum	AGTR	8 (10)	10 (9)	____	____	____	____
Sitanion hystrix	SIHY	5 (5)	7 (7)	____	____	____	____
	Others	3/ea.	5/ea.	____	____	____	____
Forbs							
Balsamorhiza sagittata	BASA	15 (14)	5 (3)	____	____	____	____
Geranium fremontii	GEFR	10 (9)	5 (4)	____	____	____	____
Lupinus caudatus	LUCA	9 (6)	7 (5)	____	____	____	____
Lupinus argenteus	LUAR	6 (4)	6 (4)	____	____	____	____
Helianthella uniflora	HEUN	5 (6)	3 (2)	____	____	____	____
Agastache urticifolia	AGUR	4 (5)	5 (4)	____	____	____	____
Castilleja chromosa	CACH	4 (3)	5 (4)	____	____	____	____
Hackelia patens	HAPA	4 (4)	4 (3)	____	____	____	____
Hackelia floribunda	HAFL	4 (4)	4 (4)	____	____	____	____
Eriogonum heracleoides	ERHE	4 (4)	7 (9)	____	____	____	____
Lithospermum ruderale	LIRU	3 (4)	2 (2)	____	____	____	____
Annual spp.	ANN	2 (3)	15 (9)	____	____	____	____
	Others	2/ea.	4/ea.	____	____	____	____
					Totals	____	____
					Similarity Class	____	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/SYOR/BRCA CT - AGTR Phase. Prevalent Species List (n = 18).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	28 (14)	____	____
Symphoricarpos oreophilus	SYOR	16 (10)	____	____
Amelanchier alnifolia	AMAL	6 (3)	____	____
Chrysothamnus viscidiflorus	CHVI	2 (2)	____	____
Others	Others	5/ea.	____	____
Grasses				
Agropyron trachycaulum	AGTR	15 (10)	____	____
Agropyron spicatum	AGSP	14 (8)	____	____
Festuca idahoensis	FEID	8 (4)	____	____
Bromus carinatus	BRCA	8 (7)	____	____
Elymus cinereus	ELCI	7 (5)	____	____
Others	Others	3/ea.	____	____
Forbs				
Eriogonum heracleoides	ERHE	6 (4)	____	____
Lupinus argenteus	LUAR	5 (3)	____	____
Hackelia floribunda	HAFL	4 (4)	____	____
Agastache urticifolia	AGUR	4 (4)	____	____
Aster spp.	ASTER	3 (5)	____	____
Annual spp.	ANN	2 (2)	____	____
Allium acuminatum	ALAC	1 (2)	____	____
Penstemon spp.	PENZ	1 (1)	____	____
Others	Others	2/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

Table . ARVA/SYOR/BRCA CT - GEFR Phase. Prevalent Species List (n = 16).

Species	Code	Reference % Composition Production	Measured % Composition Production	Lowest Value
Shrubs				
Artemisia tridentata ssp. vaseyana	ARVA	21 (15)	____	____
Symphoricarpos oreophilus	SYOR	5 (4)	____	____
Chrysothamnus viscidiflorus	CHVI	5 (4)	____	____
Others	Others	5/ea.	____	____
Grasses				
Elymus cinereus	ELCI	8 (10)	____	____
Festuca idahoensis	FEID	5 (6)	____	____
Carex spp.	CAREX	4 (4)	____	____
Hesperochloa kingii	HEKI	4 (4)	____	____
Agropyron spicatum	AGSP	3 (6)	____	____
Bromus carinatus	BRCA	2 (2)	____	____
Agropyron trachycaulum	AGTR	2 (2)	____	____
Others	Others	2/ea.	____	____
Forbs				
Geranium fremontii	GEFR	14 (10)	____	
Balsamorhiza sagittata	BASA	11 (16)	____	____
Lupinus caudatus	LUCA	9 (3)	____	____
Hackelia patens	HAPA	6 (3)	____	____
Helianthella uniflora	HEUN	6 (3)	____	____
Hackelia floribunda	HAFL	6 (5)	____	____
Agastache urticifolia	AGUR	5 (5)	____	____
Castilleja chromosa	CASTI	4 (3)	____	____
Eriogonum umbellatum	ERUM	4 (6)	____	____
Frasera speciosa	FRSP	4 (1)	____	____
Potentilla glandulosa	POGL	3 (3)	____	____
Annual spp.	ANN	2 (3)	____	____
Penstemon rydbergii	PERY	2 (1)	____	____
Others	Others	2/ea.	____	____
			Totals	____
			Similarity Class	____

Note: values provided correspond to mean and (standard deviation) respectively.

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GRASSES

SCIENTIFIC NAME	FAMILY	COMMON NAME
AGROPYRON CRISTATUM	POACEAE	Crested wheatgrass
AGROPYRON INTERMEDIUM	"	Intermediate wheatgrass
AGROPYRON SITANION	"	-----
AGROPYRON SMITHII	"	Western wheatgrass
AGROPYRON SPICATUM	"	Bluebunch wheatgrass
AGROPYRON TRACHYCAULUM	"	Slender wheatgrass
BROMUS CARINATUS	"	California brome
BROMUS INERMIS	"	Smooth brome
BROMUS TECTORUM	"	Cheatgrass
CAREX GEYERI	CYPERACEAE	Elk sedge
DANTHONIA UNISPICATA	POACEAE	Onespike danthonia
ELYMUS CINEREUS	"	Great Basin wildrye
EQUISETUM ARVENSE	EQUISETACEAE	Field horsetail
FESTUCA IDAHOENSIS	POACEAE	Idaho fescue
HILARIA JAMESII	"	Galleta grass
JUNCUS BALTICUS	JUNCACEAE	Baltic rush
KOELARIA CRISTATA	POACEAE	Junegrass
HESPEROCHLOA KINGII	"	King spikefescue
MELICA BULBOSA	"	Onion grass
MUHLENBERGIA RICHARDSONIS	"	Mat muhly
ORYZOPSIS HYMENOIDES	"	Indian ricegrass
POA AMPLA	"	Big bluegrass
POA BULBOSA	"	Bulbous bluegrass
POA FENDLERIANA	"	Muttongrass

GRASSES (Cont'd)

SCIENTIFIC NAME	FAMILY	COMMON NAME
POA NEVADENSIS	POACEAE	Nevada bluegrass
POA PRATENSIS	"	Kentucky bluegrass
POA SANDBERGII	"	Sandberg bluegrass
SITANION HYSTRIX	"	Squirreltail
STIPA COLUMBIANA	"	Columbia needlegrass
STIPA COMATA	"	Needle and thread grass
STIPA LETTERMANII	"	Letterman needlegrass
STIPA OCCIDENTALIS	"	Western needlegrass
STIPA THURBERIANA	"	Thurber needlegrass
STIPA WILLIAMSII	"	Williams needlegrass
VULPIA OCTOFLORA	"	6-weeks fescue

TREES AND SHRUBS

SCIENTIFIC NAME	FAMILY	COMMON NAME
ABIES LASIOCARPA	PINACEAE	Subalpine fir
AMELANCHIER ALNIFOLIA	ROSACEAE	Serviceberry
AMELANCHIER UTAHENSIS	"	Utah serviceberry
ARTEMISIA ARBUSCULA	ASTERACEAE	Low sagebrush
ARTEMISIA CANA	"	Silver sagebrush
ARTEMISIA FRIGIDA	"	Fringed sagebrush
ARTEMISIA LONGILOBA	"	Alkali sagebrush
ARTEMISIA LUDOVICIANA	"	Louisiana sagebrush
ARTEMISIA NOVA	"	Black sage
ARTEMISIA TRIDENTATA-TRIDENTATA	"	Basin big sage
ARTEMISIA TRIDENTATA-VASEYANA	"	Mountain big sage
ARTEMISIA TRIDENTATA-WYOMINGENSIS	"	Wyoming big sage
ATRIPLEX CANESCENS	CHENOPODIACEAE	4-wing saltbush
ATRIPLEX CONFERTIFOLIA	"	Shadscale
CERATOIDES LANATA	"	Winterfat
CERCOCARPUS LEDIFOLIUS	ROSACEAE	Curlleaf mountain mahogany
CEANOTHUS VELUTINUS	RHAMNACEAE	Snowbrush
CHRYSOTHAMNUS NAUSEOSUS	ASTERACEAE	Rubber rabbittbrush
CHRYSOTHAMNUS VISCIDIFLORUS	"	Green rabbittbrush
COWANIA MEXICANA	ROSACEAE	Cliffrose
EPHEDRA NEVADENSIS	EPHEDRACEAE	Nevada ephedra
EPHEDRA VIRIDIS	EPHEDRACEAE	Green ephedra
FORSELLESIA NEVADENSIS	CELASTRACEAE	-----

TREES AND SHRUBS (Cont'd)

SCIENTIFIC NAME	FAMILY	COMMON NAME
GRAYIA SPINOSA	CHENOPODIACEAE	Spiny hopsage
JUNIPERUS OSTEOSPERMA	CUPRESSACEAE	Utah juniper
PERAPHYLLUM RAMOSISSIMUM	ROSACEAE	Common squaw-apple
PINUS FLEXILUS	PINACEAE	Limber pine
PINUS MONOPHYLLA	"	Singleleaf pine
POPULUS TREMULOIDES	SALICACEAE	Quaking aspen
PRUNUS VIRGINIANA MELANOCARPA	ROSACEAE	Chokecherry
PURSHIA TRIDENTATA	"	Bitterbursh
RIBIES AUREUM	GROSSULARIACEAE	Golden current
RIBIES CEREUM	"	Wax current
ROSA WOODSII	ROSACEAE	Woods rose
SAMBUCUS CERULEA	CAPRIFOLIACEAE	Elderberry
SARCOBATUS VERMICULATUS	CHENOPODIACEAE	Black greasewood
SYMPHORICARPOS OREOPHILUS	CAPRIFOLIACEAE	Snowberry
TETRADYMIA CANESCENS	ASTERACEAE	Gray horsebrush
TETRADYMIA GLABRATA	"	Littleleaf horsebrush

FORBS

APIACEAE (UMBELLIFERAE) Parsley Family

CYMOPTERUS IBAPENSIS	Cymopterus
LOMATIUM DISSECTUM	Biscuitroot
L. NUDICAULE	Barestem lomatium
L. SPECIES	-----
OSMORHIZA DEPAUPERATA	Bluntseed sweetroot
O. OCCIDENTALIS	Anise sweetroot
PERIDERIDIA BOLANDERI	Bolander yampa

ASTERACEAE (COMPOSITAE) Sunflower Family

ACHILLEA MILLEFOLIUM	Common yarrow
AGOSERIS GLAUCA	False dandelion
ANTENNARIA MICROPHYLLA	Littleleaf pussytoes
ASTER SCOPULORUM	Lava aster
ASTER SPECIES	Aster
BALSAMORHIZA HOOKERI	Hookers balsamroot
B. SAGITTATA	Arrowleaf balsamroot
CHAENACTIS DOUGLASII	Pincushion
CIRCIUM UTAHENSE	Utah thistle
CREPIS ACUMINATA	Tapertip hawksbeard
C. MODOCENSIS	Yellowstone hawksbeard
C. OCCIDENTALIS	Hawksbeard
ERIGERON ARGENTEUS	Purple fleabane

ASTERACEAE (COMPOSITAE) Sunflower Family (Cont'd)

E. PUMILUS	Low fleabane
E. SPECIES	-----
HAPLOPAPPUS ACAULIS	Stemless goldenweed
HELIANTHELLA UNIFLORA	Oneflower helianthella
HELIANTHUS SPECIES	Sunflower
HELIOMERIS MULTIFLORA	-----
IVA AXILLARIS	Povertyweed
LYGODESMIA SPINOSA	Spiny skeletonweed
MACHAERANTHERA CANESCENS	Hoary machaeranthera
MADIA GLOMERATA	Tarweed
PETRADORIA PUMILUS	Rock goldenrod
SENECIO INTEGERRIMUS	
S. MULTILOBATUS	
S. SERRA	
SOLIDAGO OCCIDENTALIS	Goldenrod
TARAXACUM OFFICINALE	Dandelion
TRAGOPOGON DUBIUS	Yellow salsify
WYETHIA AMPLEXICAULIS	Mulesear wyethia
W. HELIANTHOIDES	Whitehead wyethia

FORBS (Cond't)

BERBERIDACEAE Barberry Family

MAHONIA REPENS	Oregon grape

BORAGINACEAE Borage Family

CRYPTANTHA GRACILIS	Cryptantha
C. SPECIES	
HACKELIA FLORIBUNDA	Showy stickseed
H. MICRANTHA	Forget-me-not
H. PATENS	Stickseed
LITHOSPERMUM RUDERALE	Wayside gromwell
MERTENSIA CILIATA	Mountain bluebells
M. OBLONGIFOLIA	Oblongleaf bluebells

BRASSICACEAE (CRUCIFERAE) Mustard Family

ARABIS CONFINUS	Rockcress
A. DRUMMONDI	Drummond rockcress
A. GLABRA	Towermustard rockcress
A. HOLBOELLII	Holboel rockcress
A. SPARSIFLORA	Sicklepot rockcress
CAULANTHUS CRASSICAULIS	Thickstem wildcabbage
DRABA SPECIES	Draba

BRASSICACEAE (CRUCIFERAE) Mustard Family (Cont'd)

ERYSIMUM CAPITATUM	Western wallflower
LESQUERELLA KINGII	Kings bladderpod
PHYSARIA CHAMBERSII	Twinpot
STREPTANTHUS CORDATUS	Heartlived streptanthus

CACTACEAE Cactus Family

ECHINOCACTUS SPECIES	Barrel cactus
MAMMILLARIA SPECIES	Mammillaria
OPUNTIA POLYACANTHA	Plains pricklypear

CARYOPHYLLACEAE Pink Family

ARENARIA KINGII	Kings sandwort
SILENE DOUGLASII	Silene
STELLARIA JAMESIANA	Tuber starwort

CHENOPODIACEAE Goosefoot Family

HALOGETON GLOMERATUS	Halogeton

FORBS (Cont'd)

CRASSULACEAE Stonecrop Family

SEDUM STENOPETALUM	Stonecrop

ELAEAGNACEAE Oleaster Family

SHERPERDIA CANADENSIS	Russett buffaloberry

EUPHORBIACEAE Spurge Family

EUPHORBIA ALBOMARGINATA	White margin euphorbia

FABACEAE (LEGUMINOSAE) Pea Family

ASTRAGALUS CALYCOSUS	Torrey milkvetch
A. LENTIGINOSUS	Specklepod locoweed
A. NEWBERRYI	Newberry milkvetch
A. OOPHORUS	
A. PURSHII	Pursh locoweed
A. SPECIES	
A. UTAHENSIS	Utah locoweed
LATHYRUS SPECIES	Peavine
LUPINUS ARGENTEUS	Silvery Lupine
L. CAUDATUS	Tailcup lupine

FORBS (Cont'd)

FABACEAE (LEGUMINOSAE) Pea Family (Cont'd)

L. SERCIEUS	Silky lupine
TRILFOLIUM ANDERSONII	Five leaf clover

GENTIANACEAE Gentian Family

FRASERA ALBOMARGINATA	White margin frasera
FRASERA SPECIOSA	Showy frasera

GERANIACEAE Geranium Family

GERANIUM FREMONTII	Freemont geranium
G. VISCOSISSIMUM	Sticky geranium

HYDROPHYLLACEA Waterleaf Family

HYDROPHYLLUM CAPITATUM	Ballhead waterleaf
PHACELIA HASTATA	Phacelia
PHACELIA SERICEA	"

LAMIACEAE (LABIATAE) Mint Family

AGASTACHE URTICIFOLIA	Netteleaf gianthyssop
MONORDELLA ODORATISSIMA	Pacific monordella

LAMIACEAE (LABIATAE) Pea Family (Cont'd)

MARRUBIUM VULGARE	Horehound
SCUTTELARIA ANTIRRHINOIDES	Skullcap

LINACEAE Flax Family

LINUM PERENNE	Blue flax

MALVACEAE Mallow Family

SIDALACEA NEOMEXICANA	New Mexico checkermallow
SPHAERALCEA COCCINEA	Scarlet globemallow

ONAGRACEAE Evening-primrose Family

EPILOBIUM ANGUSTIFOLIUM	Fireweed

OROBANCHACEAE Broomrape Family

OROBANCHE CALIFORNICA	Broomrape

PAEONIACEAE Peony Family

PAEONIA BROWNII	Browns peony

POLEMONIACEAE Phlox Family

ERIASTRUM SPARSIFLORUM	Eriastrum
GILIA CONGESTA	Ballhead gilia
IPOMOPSIS AGGREGATA	Skyrocket gilia
LEPTODACTYLON PUNGENS	Pricly phlox
LINANTHASTRUM NUTTALLI	Nuttall gilia
PHLOX HOODII	Hoods phlox
P. LONGIFOLIA	Longleaf phlox
POLEMONIUM FOLIOSISSIMUM	Leafy polemonium

POLYGONACEAE Buckwheat Family

ERIOGONUM BREVICAULE	Short buckwheat
E. CAESPITOSUM	
E. HERACLEOIDES	Wyeth eriogonum
E. MICROTHECUM	Slenderbush eriogonum
E. OVALIFOLIUM	Cushion eriogonum
E. RACEMOSUM	
E. UMBELLATUM	Sulphur eriogonum

RANUNCULACEAE Crowfoot Family

DELPHINIUM ANDERSONII	Anderson larkspur
THALICTRUM FENDLERI	Fendler meadow rue

ROSACEAE Rose Family

GEUM TRIFLORUM	Avens
POTENTILLA GLANDULOSA	Sticky cinquefoil
P. GRACILIS	Northwest cinquefoil
P. SPECIES	

SANTALACEAE Sandalwood Family

COMMANDRA PALLIDA	Bastard toodflax

SAXIFRAGACEAE Saxifrage Family

HEUCHERA PARVIFOLIA	Littleleaf alumroot
LITHOPHRAGMA BULBIFERA	Woodland star

SCROPHULARIACEAE Figwort Family

CASTILLEJA CHROMOSA	Desert Indian paintbrush
C. CUSICKII	Scarlet painted cup
C. FLAVA	Yellow Indian paintbrush
C. LINARIAEFOLIA	Wyoming painted cup
PEDICULARIS CENTRANTHERA	Dwarf lousewort
PENSTOMEN CAESPITOSUS	Mat penstomen
P. CONFUSUS	

FORBS (Cont'd)

SCROPHULARIACEAE Figwort Family (Cont'd)

P. EATONII	Eaton penstomen
P. HUMILUS	Low penstomen
P. PALMERI	Palmer penstomen
P. RYDBERGII	Rydberg penstomen
P. SPECIES	
P. SPECIOSUS	Royal penstomen
P. WATSONII	Watson penstomen

VIOLACEAE Violet Family

VIOLA NUTTALLI	Nuttall violet

MONOCOTYLEDONS

IRIDACEAE Iris Family

IRIS MISSOURIENSIS	Blue-eyed grass
SISYRINCHIUM HALOPHILUM	Rocky mountain iris

LILIACEAE Lily Family

ALLIUM ANCEPS	Twin onion
ALLIUM ACUMINATUM	Tapertip onion
CALOCHORTUS NUTTALLII	Seqo lily
FRITILLARIA ATROPURPUREA	Purplespot fritillaria
LEUCORINUM MONTANUM	Starlily
SMILACINA RACEMOSA	False solomon's seal
ZIGADENUS PANICULATUS	Foothill deathcamas

Table . Listing of generalized class estimates by selected variables for the ARNO/AGSP CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<9	9-16	16-23	>23
ARNO shrub cover	<8	8-15	15-22	>22
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<350	350-500	500-650	>650
Grass production (Kg/ha/yr)	<40	40-100	100-160	>160
Forb production (Kg/ha/yr)	<10	10-80	80-160	>160
Shrub production (Kg/ha/yr)	<150	150-300	300-450	>450
Biomass composition - Grass (%)	<10	10-25	25-40	>40
Biomass composition - Forb (%)	<5	5-15	15-25	>25
Biomass composition - Shrub (%)	<40	40-60	60-80	>80
Vegetation and litter ground cover (%)	<30	30-45	45-60	>60
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<20	20-35	35-50	>50

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARNO/ORHY CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<16	16-22	22-28	>28
ARNO shrub cover	<13	13-19	19-25	>25
CHVI shrub cover	<1	1-9	9-19	>19
Total production (Kg/ha/yr)	<250	250-450	450-650	>650
Grass production (Kg/ha/yr)	<10	10-40	40-70	>70
Forb production (Kg/ha/yr)	<5	5-30	30-50	>50
Shrub production (Kg/ha/yr)	<150	150-350	350-550	>550
Biomass composition - Grass (%)	<2	2-10	10-20	>20
Biomass composition - Forb (%)	<1	1-10	10-20	>20
Biomass composition - Shrub (%)	<65	65-80	80-95	>95
Vegetation and litter ground cover (%)	<30	30-40	40-50	>50
Bare ground cover (%)	<15	15-25	25-35	>35
Pavement ground cover (%)	<25	25-35	35-45	>45

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARNO/ATCO/SIHY CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<15	15-19	19-25	>25
ARNO shrub cover	<13	13-19	19-25	>25
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<250	250-400	400-550	>550
Grass production (Kg/ha/yr)	<20	20-50	50-80	>80
Forb production (Kg/ha/yr)	<10	10-20	20-40	>40
Shrub production (Kg/ha/yr)	<200	200-350	350-500	>500
Biomass composition - Grass (%)	<5	5-15	15-25	>25
Biomass composition - Forb (%)	<1	1-5	5-10	>10
Biomass composition - Shrub (%)	<70	70-80	80-90	>90
Vegetation and litter ground cover (%)	<20	20-35	35-50	>50
Bare ground cover (%)	<5	5-20	20-35	>35
Pavement ground cover (%)	<30	30-35	35-40	>40

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARAR/AGSP CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<13	13-20	20-27	>27
ARAR shrub cover	<13	13-19	19-25	>25
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<300	300-500	500-700	>700
Grass production (Kg/ha/yr)	<60	60-140	130-200	>200
Forb production (Kg/ha/yr)	<20	20-70	70-120	>120
Shrub production (Kg/ha/yr)	<150	150-350	350-550	>550
Biomass composition - Grass (%)	<10	10-30	30-50	>50
Biomass composition - Forb (%)	<5	5-15	15-25	>25
Biomass composition - Shrub (%)	<40	40-55	55-70	>70
Vegetation and litter ground cover (%)	<40	40-50	50-60	>60
Bare ground cover (%)	<5	5-10	10-15	>15
Pavement ground cover (%)	<15	15-30	30-45	>45

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARAR/FEID/POSA CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<10	10-16	16-22	>22
ARAR shrub cover	<10	10-16	16-22	>22
CHVI shrub cover	<1	1	1	>1
Total production (Kg/ha/yr)	<300	300-500	500-700	>700
Grass production (Kg/ha/yr)	<100	100-250	250-400	>400
Forb production (Kg/ha/yr)	<20	20-80	80-130	>130
Shrub production (Kg/ha/yr)	<40	40-170	170-300	>300
Biomass composition - Grass (%)	<30	30-45	45-60	>60
Biomass composition - Forb (%)	<10	10-20	20-30	>30
Biomass composition - Shrub (%)	<20	20-35	35-40	>40
Vegetation and litter ground cover (%)	<40	40-50	50-60	>60
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<10	10-25	25-40	>40

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARAR/FEID CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<6	6-12	12-18	>18
ARAR shrub cover	<3	3-10	10-17	>17
CHVI shrub cover	<1	1-4	4-10	>10
Total production (Kg/ha/yr)	<400	400-600	600-800	>800
Grass production (Kg/ha/yr)	<250	250-400	400-550	>550
Forb production (Kg/ha/yr)	<30	30-100	100-170	>170
Shrub production (Kg/ha/yr)	<50	50-100	100-150	>150
Biomass composition - Grass (%)	<60	60-70	70-80	>80
Biomass composition - Forb (%)	<5	5-15	15-25	>25
Biomass composition - Shrub (%)	<5	5-15	15-25	>25
Vegetation and litter ground cover (%)	<45	45-60	60-75	>75
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<5	5-20	20-35	>35

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARLO/FEID CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<13	13-23	23-33	>33
ARLO shrub cover	<10	10-20	20-30	>30
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<400	400-500	500-600	>600
Grass production (Kg/ha/yr)	<100	100-200	200-300	>300
Forb production (Kg/ha/yr)	<10	10-80	80-160	>160
Shrub production (Kg/ha/yr)	<120	120-180	180-240	>240
Biomass composition - Grass (%)	<30	30-50	50-80	>80
Biomass composition - Forb (%)	<5	5-15	15-25	>25
Biomass composition - Shrub (%)	<20	20-35	35-50	>50
Vegetation and litter ground cover (%)	<45	45-60	60-75	>75
Bare ground cover (%)	<5	5-20	20-35	>35
Pavement ground cover (%)	<5	5-20	20-35	>35

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARWYO/SIHY CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<15	15-19	19-23	>23
ARWYO shrub cover	<15	15-19	19-23	>23
CHVI shrub cover	<1	1-2	2-4	>4
Total production (Kg/ha/yr)	<550	550-600	600-650	>650
Grass production (Kg/ha/yr)	<100	100-175	175-250	>250
Forb production (Kg/ha/yr)	<20	20-80	80-140	>140
Shrub production (Kg/ha/yr)	<250	250-350	350-450	>450
Biomass composition - Grass (%)	<10	10-25	25-40	>40
Biomass composition - Forb (%)	<5	5-15	15-25	>25
Biomass composition - Shrub (%)	<40	40-60	60-80	>80
Vegetation and litter ground cover (%)	<60	60-70	70-80	>80
Bare ground cover (%)	<15	15-20	20-25	>25
Pavement ground cover (%)	<5	5-10	10-20	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARTR/AGSP CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<11	11-21	21-31	>31
ARTR shrub cover	<3	3-15	15-27	>27
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<300	300-700	700-1100	>1100
Grass production (Kg/ha/yr)	<100	100-350	350-550	>550
Forb production (Kg/ha/yr)	<10	10-110	110-270	>270
Shrub production (Kg/ha/yr)	<100	100-250	250-400	>400
Biomass composition - Grass (%)	<35	35-55	55-75	>75
Biomass composition - Forb (%)	<5	5-20	20-35	>35
Biomass composition - Shrub (%)	<5	5-25	25-45	>45
Vegetation and litter ground cover (%)	<50	50-70	70-90	>90
Bare ground cover (%)	<5	5-20	20-35	>35
Pavement ground cover (%)	<1	1-5	5-10	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/AGSP CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<14	14-24	24-34	>34
ARVA shrub cover	<9	9-18	18-27	>27
CHVI shrub cover	<1	1-2	2-4	>4
Total production (Kg/ha/yr)	<400	400-750	750-1100	>1100
Grass production (Kg/ha/yr)	<50	50-150	150-250	>250
Forb production (Kg/ha/yr)	<10	10-140	140-280	>280
Shrub production (Kg/ha/yr)	<150	150-450	450-700	>700
Biomass composition - Grass (%)	<10	10-25	25-40	>40
Biomass composition - Forb (%)	<5	5-20	20-35	>35
Biomass composition - Shrub (%)	<35	35-55	55-75	>75
Vegetation and litter ground cover (%)	<40	40-60	60-80	>80
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<5	5-20	20-35	>35

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/AGSP CT - BASA phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<15	15-25	25-35	>35	--
Total production (Kg/ha/yr)	<420	420-720	720-1020	>1020	--
Grass production (Kg/ha/yr)	<40	40-170	170-300	>300	--
Forb production (Kg/ha/yr)	<10	10-160	160-310	>310	--
Shrub production (Kg/ha/yr)	<110	110-390	390-670	>670	--
Biomass composition - Grass (%)	<5	5-25	25-45	>45	--
Biomass composition - Forb (%)	<5	5-20	20-35	>35	--
Biomass composition - Shrub (%)	<25	25-55	55-85	>85	--
Vegetation and litter ground cover (%)	<50	50-65	65-80	>80	--
Bare ground cover (%)	<5	5-15	15-25	>25	--
Pavement ground cover (%)	<10	10-20	20-30	>30	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/AGSP CT - POFE phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<14	14-22	22-30	>30	--
Total production (Kg/ha/yr)	<370	370-770	770-1170	>1170	--
Grass production (Kg/ha/yr)	<80	80-155	155-230	>230	--
Forb production (Kg/ha/yr)	<20	20-120	120-220	>220	--
Shrub production (Kg/ha/yr)	<280	280-500	500-820	>820	--
Biomass composition - Grass (%)	<10	10-20	20-30	>30	--
Biomass composition - Forb (%)	<5	5-20	20-35	>35	--
Biomass composition - Shrub (%)	<50	50-60	60-70	>70	--
Vegetation and litter ground cover (%)	<40	40-60	60-80	>80	--
Bare ground cover (%)	<5	5-10	10-15	>15	--
Pavement ground cover (%)	<15	15-30	30-45	>45	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/AGSP CT - PUTR phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<19	19-27	27-35	>35	--
Total production (Kg/ha/yr)	<400	400-700	700-1000	>1000	--
Grass production (Kg/ha/yr)	<30	30-130	130-230	>230	--
Forb production (Kg/ha/yr)	<5	5-125	125-245	>245	--
Shrub production (Kg/ha/yr)	<250	250-440	440-630	>630	--
Biomass composition - Grass (%)	<10	10-20	20-30	>30	--
Biomass composition - Forb (%)	<5	5-15	15-25	>25	--
Biomass composition - Shrub (%)	<50	50-65	65-80	>80	--
Vegetation and litter ground cover (%)	<40	40-55	55-70	>70	--
Bare ground cover (%)	<10	10-20	20-30	>30	--
Pavement ground cover (%)	<10	10-25	25-40	>40	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/ELCI CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<11	11-16	16-21	>21
ARVA shrub cover	<4	4-10	10-16	>16
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<600	600-1200	1200-1800	>1800
Grass production (Kg/ha/yr)	<100	100-250	250-400	>400
Forb production (Kg/ha/yr)	<150	150-650	650-1150	>1150
Shrub production (Kg/ha/yr)	<100	100-300	300-500	>500
Biomass composition - Grass (%)	<15	15-25	25-35	>35
Biomass composition - Forb (%)	<30	30-50	50-70	>70
Biomass composition - Shrub (%)	<40	10-25	25-40	>40
Vegetation and litter ground cover (%)	<45	45-65	65-85	>85
Bare ground cover (%)	<5	5-25	25-45	>45
Pavement ground cover (%)	<1	1-10	10-20	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/FEID CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<9	9-18	18-28	>28
ARVA shrub cover	<4	4-15	15-26	>26
CHVI shrub cover	<1	1-3	3-5	>5
Total production (Kg/ha/yr)	<500	500-800	800-1100	>1100
Grass production (Kg/ha/yr)	<200	200-350	350-500	>500
Forb production (Kg/ha/yr)	<10	10-180	180-370	>370
Shrub production (Kg/ha/yr)	<50	50-250	250-450	>450
Biomass composition - Grass (%)	<25	25-45	45-65	>65
Biomass composition - Forb (%)	<10	10-25	25-35	>35
Biomass composition - Shrub (%)	<10	10-30	30-50	>50
Vegetation and litter ground cover (%)	<65	65-75	75-85	>85
Bare ground cover (%)	<5	5-10	10-20	>20
Pavement ground cover (%)	<1	1-10	10-20	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/FEID CT - LUCA phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<5	5-18	18-31	>31	--
Total production (Kg/ha/yr)	<660	660-1020	1020-1380	>1380	--
Grass production (Kg/ha/yr)	<215	215-345	345-485	>485	--
Forb production (Kg/ha/yr)	<10	10-310	310-610	>610	--
Shrub production (Kg/ha/yr)	<10	10-340	340-670	>670	--
Biomass composition - Grass (%)	<20	20-40	40-60	>60	--
Biomass composition - Forb (%)	<5	5-30	30-50	>50	--
Biomass composition - Shrub (%)	<10	10-30	30-50	>50	--
Vegetation and litter ground cover (%)	<60	60-85	85-95	>95	--
Bare ground cover (%)	<1	1-10	10-20	>20	--
Pavement ground cover (%)	<1	1-5	5-10	>10	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/FEID CT - LUAR phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<10	10-19	19-28	>28	--
Total production (Kg/ha/yr)	<340	340-700	700-1030	>1030	--
Grass production (Kg/ha/yr)	<190	190-360	360-530	>530	--
Forb production (Kg/ha/yr)	<10	10-140	140-270	>270	--
Shrub production (Kg/ha/yr)	<40	40-220	220-400	>400	--
Biomass composition - Grass (%)	<30	30-50	50-70	>70	--
Biomass composition - Forb (%)	<10	10-20	20-30	>30	--
Biomass composition - Shrub (%)	<15	15-30	30-45	>45	--
Vegetation and litter ground cover (%)	<70	70-80	80-90	>90	--
Bare ground cover (%)	<5	5-10	10-15	>15	--
Pavement ground cover (%)	<5	5-10	10-15	>15	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/FEID CT - PUTR phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<9	9-19	19-28	>28	--
Total production (Kg/ha/yr)	<460	460-650	650-840	>840	--
Grass production (Kg/ha/yr)	<160	160-310	310-460	>460	--
Forb production (Kg/ha/yr)	<50	50-130	130-210	>210	--
Shrub production (Kg/ha/yr)	<110	120-220	220-330	>330	--
Biomass composition - Grass (%)	<35	35-50	50-65	>65	--
Biomass composition - Forb (%)	<10	10-20	20-30	>30	--
Biomass composition - Shrub (%)	<15	15-30	30-45	>45	--
Vegetation and litter ground cover (%)	<60	60-70	70-80	>80	--
Bare ground cover (%)	<5	5-15	15-25	>25	--
Pavement ground cover (%)	<5	5-15	15-20	>20	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/SYOR/AGSP CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<17	17-25	25-33	>33
ARVA shrub cover	<8	8-15	15-22	>22
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<550	550-950	950-1350	>1350
Grass production (Kg/ha/yr)	<100	100-200	200-300	>300
Forb production (Kg/ha/yr)	<10	10-280	280-570	>570
Shrub production (Kg/ha/yr)	<100	100-200	200-300	>300
Biomass composition - Grass (%)	<10	10-20	20-30	>30
Biomass composition - Forb (%)	<15	15-30	30-45	>45
Biomass composition - Shrub (%)	<30	30-50	50-70	>70
Vegetation and litter ground cover (%)	<50	50-65	65-80	>80
Bare ground cover (%)	<10	10-20	20-30	>30
Pavement ground cover (%)	<1	1-10	10-20	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/SYOR/BRCA CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<12	12-22	22-32	>32
ARVA shrub cover	<5	5-13	13-21	>21
CHVI shrub cover	<1	1-2	2-3	>3
Total production (Kg/ha/yr)	<600	600-1200	1200-1800	>1800
Grass production (Kg/ha/yr)	<50	50-200	200-350	>350
Forb production (Kg/ha/yr)	<10	10-540	540-1080	>1080
Shrub production (Kg/ha/yr)	<100	100-375	375-600	>600
Biomass composition - Grass (%)	<10	10-25	25-40	>40
Biomass composition - Forb (%)	<20	20-40	40-60	>60
Biomass composition - Shrub (%)	<20	20-35	35-50	>50
Vegetation and litter ground cover (%)	<65	65-80	80-95	>95
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<1	1-10	10-20	>20

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/SYOR/BRCA CT - AGTR phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<13	13-22	22-31	>31	--
Total production (Kg/ha/yr)	<300	300-600	600-900	>900	--
Grass production (Kg/ha/yr)	<100	100-210	210-320	>320	--
Forb production (Kg/ha/yr)	<40	40-90	90-140	>140	--
Shrub production (Kg/ha/yr)	<100	100-250	250-400	>400	--
Biomass composition - Grass (%)	<25	25-45	40-55	>55	--
Biomass composition - Forb (%)	<10	10-20	20-30	>30	--
Biomass composition - Shrub (%)	<20	20-40	40-60	>60	--
Vegetation and litter ground cover (%)	<65	65-80	80-95	>95	--
Bare ground cover (%)	<5	5-10	10-15	>15	--
Pavement ground cover (%)	<5	5-10	10-15	>15	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARVA/SYOR/BRCA CT - GEFR phase.

Variable	Very Low	Low	Moderate	High	Observed Class
Total shrub cover (%)	<16	16-23	23-30	>30	--
Total production (Kg/ha/yr)	<1100	1100-1700	1700-2300	>2300	--
Grass production (Kg/ha/yr)	<80	80-220	220-380	>360	--
Forb production (Kg/ha/yr)	<470	470-1070	1070-1670	>1670	--
Shrub production (Kg/ha/yr)	<270	270-460	460-650	>650	--
Biomass composition - Grass (%)	<5	5-15	15-25	>25	--
Biomass composition - Forb (%)	<40	40-55	55-70	>70	--
Biomass composition - Shrub (%)	<20	20-30	30-40	>40	--
Vegetation and litter ground cover (%)	<70	70-80	80-90	>90	--
Bare ground cover (%)	<5	5-15	15-25	>25	--
Pavement ground cover (%)	<1	1-5	5-10	>10	--

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)

Table . Listing of generalized class estimates by selected variables for the ARTR/FEID CT.

Variable	Class			
	Very Low	Low	Moderate	High
Total shrub cover	<9	9-16	16-23	>23
ARTR shrub cover	<3	3-10	10-17	>17
CHVI shrub cover	<1	1-4	4-7	>7
Total production (Kg/ha/yr)	<650	650-950	950-1250	>1250
Grass production (Kg/ha/yr)	<250	250-400	400-550	>550
Forb production (Kg/ha/yr)	<30	30-250	250-470	>470
Shrub production (Kg/ha/yr)	<150	150-300	300-450	>450
Biomass composition - Grass (%)	<25	25-45	45-65	>65
Biomass composition - Forb (%)	<10	10-25	25-40	>40
Biomass composition - Shrub (%)	<10	10-30	30-50	>50
Vegetation and litter ground cover (%)	<70	70-80	80-90	>90
Bare ground cover (%)	<5	5-15	15-25	>25
Pavement ground cover (%)	<1	1-5	5-10	>10

Note: (Kg/ha/yr x 0.9 = lbs/ac/yr)